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ABSTRACT

One of 10 publications resulting from a comprehensive long-range vocational education planning project, this report presents three areas of study: The applicability of the planning process to vocational education, a description of the planning model in detail, and an examination of organizational structures for educational planning and their relationships to other community planning systems. Chapter I provides an overview of vocational education and the planning process. Chapter II describes labor market planning as it relates to vocational education, and chapter III analyzes the projection and evaluation of student interest in vocational education. Chapters IV through VIII look at the major systems internal to vocational education: Curriculum development, facility and equipment planning, planning for instructional personnel, accounting and budgeting, and placement programs. Chapter IX relates vocational education planning to other planning systems including community or urban planning, labor market planning, and others. (BL)

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PLANNING FOR VOCATIONAL EDUCATION

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PLANNING FOR VOCATIONAL EDUCATION

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INTRODUCTION

The word "planning", when it refers to the activities of public institutions, is often misunderstood. To many people the word carries negative connotations, implying the centralization of power, greater governmental control and a decrease in individual freedom. These perceptions need not be true images of how planning really works, however. Planning is nothing more than the art of preparing for the future, whatever structure that preparation takes. All individuals and organizations that survive for any length of time practice some form of planning, no matter how elementary it may be. The real question involves the quality of that planning.

Vocational education is the process or set of experiences through which one learns about a particular calling or primary work role. Planning for vocational education is therefore the art of preparing now for the future creation or facilitation of experiences through which future students can learn about primary work roles relevant to the world that they must face. These introductory definitions are oversimplified, but they provide a base for exploration of a new area of study--long-range planning for vocational education.

The purpose of this monograph is to expand the definitions mentioned above. While introducing the concept of long-range planning for vocational education, this book suggests an overall scheme for carrying out such planning and attempts to provide prospective planners with alternate methods for working with each component of the planning model. It also examines present and preferred administrative and organizational structures for planning. Since the overall objective is planning for the future, the monograph attempts to plot the future course of vocational education. In doing so, the study discusses some of the current criticisms and trends in vocational education.

A secondary goal of this report is to stimulate interest in long-range planning for vocational education. In addition to discussing and presenting models for long-range planning, it will attempt to point out the financial and social reasons why such an effort should be undertaken on a continuous basis.

Because of the complexity of the issue being discussed, the authors needed to make some assumptions about the topic in order to proceed. These assumptions must be presented here. The definitions of planning and vocational education outlined in the first two paragraphs are oversimplified. Planning for example, is not preparation in a reactive sense but in a pro-active sense. As such, it requires that objectives be defined. The writing of descriptive objectives is a task for the user of the model which will be discussed in detail in Chapter 1, but two overriding goals of planning for vocational education have been assumed and act as a foundation for this study. These two goals are, in order of importance:

1) To expand the opportunities of the individual for more economically, socially and intellectually rewarding primary work roles.
2) To promote the quantity, quality, and maximum utilization of the human resource for local and national economic development.

The overall outline of this report is, first of all, to look generally at the applicability of the planning process to vocational education; secondly to describe the planning model in detail; and thirdly, to examine organizational structures for educational planning and their relationship to other community planning systems.

Chapter I provides an overview of vocational education and the planning process and looks at the current state of the art of planning for vocational education. Chapters II and III look at the two major recipients of services provided by vocational education, the student and the economy. Chapter II describes labor market planning as it relates to vocational education and Chapter III analyzes the projection and evaluation of student interest in vocational programs.

Chapters IV through VIII look at the major systems internal to vocational education. Chapter IV first explores the issue of the best size and structure of the vocational system and then focuses on curriculum development with an emphasis on integrating occupational demand and student interest. Chapter V looks at facility and equipment planning for vocational education and Chapter VI discusses planning for instructional personnel. Chapter VII outlines fundamental accounting techniques for vocational education and offers methods for predicting and evaluating future costs based on programs, personnel and facilities. Chapter VIII points out the crucial role placement programs can and should play in vocational education planning. The final area of study, which is covered in Chapter IX, has become of increasing importance to educational planning in recent years. This important issue involves the relationship of vocational education planning to other planning systems including community or urban planning, labor market planning, and others.

I

VOCATIONAL EDUCATION AND THE PLANNING PROCESS

Introduction

The purpose of this first chapter is to provide an overview of vocational education including a brief history, a feel for its position in the larger educational system and process along with a discussion of current trends. Challenges facing traditional vocational education from new providers of training opportunities such as the Department of Labor are discussed in the first section.

The concept of the planning process -- a system for defining goals and objectives, gathering data relevant to the subject, creating a plan for the future, testing the plan, implementation and evaluation -- is presented in the second part of the chapter. Introducing the administrative educator to the planning process in the context of planning for vocational education is the objective of this section.

Current trends and the state of the art of vocational education decision-making are discussed in the third and final part of the chapter. Implicit in this section is the ability of the planning process and planning in general to help vocational decision-makers to overcome some of the present-day shortcomings of the vocational system.

Overview

As the largest "program" of the public school system dealing with education for the world of work, vocational education will assume greater significance to public education as a whole in the coming years. Even in the face of declining numbers of school-aged children, it seems likely that increasing numbers will enter vocational programs. From the federal to the local level, more funds, resources and emphasis are being directed to education which provides the recipient with specific skills for employment.

These trends do not mean that traditional vocational education programs will be expanded, however. Vocational education administered by local education agencies will be severely judged on its ability to provide the necessary skills efficiently and to all in need. Where it fails, competitors are ready and waiting to step in and fill the void. In recent years, the Department of Labor has become an important provider of job skill training at the federal level. In many cases these parallel or duplicate programs offered by vocational education. If this trend continues, vocational education's role as a primary provider of education for work is likely to be taken over by newer, more aggressive and perhaps more effective agencies.

Although vocational education has always been closely associated with training for employment, the 1963 Vocational Education Act created a much broader mandate to provide usable (and marketable) work skills to members of the community. Vocational education gradually moved away from its narrow traditional base of trade and industrial education and became not only broader in its occupational base, but also embarked on more "people" oriented programs. This trend continued as the 1968 federal amendments increased the scope and clientele of vocational education programs.

The period since the 1963 act has also seen a dramatic rise in shared-time vocational facilities throughout the country. Although the vocational facility itself may be separate, the student attending one also participates in a general or academic high-school program. To some observers this tends to reduce the duality of vocational and academic education.

The more recent trends of the 1970's away from the "college for everyone" approach has improved vocational education's image and posture, but it has also greatly increased the tasks before those involved in the field. This same trend saw the development of the concept of "career education." This concept has added a new dimension to vocational education, for it provides a much-sought link between vocational education and the larger educational structure. Through the 1960's the increasing separation between vocational and academic education became a concern not only for educators, but for many others who were concerned with the class and social welfare implications of such a separation. To them, the re-integration of education programs implicit in career education may be a welcome change.

At the same time, mounting evidence indicates that vocational education has not met the challenge created by changing circumstances. A recent report by the National Academy of Sciences indicates that the 250 million dollars spend on vocational education research in the past ten years has led to very little change in the way vocational education is taught.

We have failed to assure that adequate and relevant services are available to all that need them, and now find that other organizations outside the public education sector are developing programs to answer unmet needs. As these have developed, we have failed to integrate them into vocational programs to form a rational and responsive delivery system for our services. Also, as vocational education becomes more closely related to the rapidly expanding area of career education, increased planning capabilities will be needed for the more complex problems of rapidly changing labor market and social situations. Vocational education planners cannot stay in the mold of the traditional "one job, one career" approach, but must provide flexibility to allow individuals to plan for changing or multiple careers.

The new emphasis on training for jobs implies that labor market demand and supply information must be introduced at the local level. This means that the local education agency must develop new sources of information and new means of handling and effectively using that information.

What the changes and ferment of the last 15 years have pointed to is the need for vocational education to move with change; in a word, to plan. This monograph is advanced in an attempt to provide vocational education administrators with a technology of planning that is at present sadly lacking. Additionally, vocational education must provide a structure for planning. The planning process requires money and effort, and both must be provided at the local level if a valid response to the community is to be achieved. The next section provides an introduction to the planning process and its applications for long range planning for vocational education.

The Planning Process

In the 75 years or so of its existence, the urban and regional planning profession has evolved a conceptual framework for translating the desire to bring about orderly development of human institutions into a comprehensive process. The planning process, as it is called, is a problem-solving approach. It helps people, communities, and institutions to formulate general goals for the future and articulate those into specific tasks which should be completed at the present to promote those goals. The principles and practices involved are relevant and applicable to the numerous types of planning in use today including social, economic, land use, physical, resource, manpower, and health, as well as vocational and educational planning.

The planning process is not a rigid, step by step formula for identifying and meeting the needs of the future, however, it does help to outline and follow a series of broad, conceptual steps. A six-part approach which many planners find useful is listed below followed by a description of each step.

1) GOALS -- define the goals and objectives of the organization and system.
2) STUDY -- collect relevant data and research related institutions and subject areas.
3) PLAN -- create a plan to meet goals and objectives in light of research and data.
4) TEST -- test the plan before implementation, modify the components that are unworkable.
5) IMPLEMENTATION -- put the plan into practice.
6) EVALUATE -- determine the extent to which objectives are being attained and make modifications as needed.

Goals

Goals and objectives, which can also be viewed as targets, can be stated at several different levels of descriptiveness. Based on a perception and articulation of the direction an institution or system would like to move, goals and objectives can be very general, quite specific, or somewhere in between. Some goal statements offered by institutions and governments planning for the future are so broad that it is difficult to judge when one has arrived or succeeded. Nevertheless broad goals and objectives can provide a sense of purpose and a source of inspiration. The preamble to the U.S. Constitution and the Declaration of Independence are prime examples of broad goal statements with their familiar references stating that the goal or purpose of government is "to promote safety and the general welfare" and "to allow for the pursuit of happiness." Examples of general goal statement pertaining to education could include the following:

> To Improve the Quality of Instruction (or)
>
> To Educate Better Trained, More Employable and Better Informed Citizens

Other goals and objectives are so specific that they provide an easy measure of their accomplishment, but are too narrow to take more meaningful considerations into account. An example would be:

> To increase the number of hours in which instructors use overhead projectors by 30 percent during the next school year.

Planners or planning institutions should strive for a level of descriptiveness that is workable and best suits their purposes based on available data and time. Precisely measurable objectives are not the best for every situation. Sometimes it is preferable to define a hierarchy of goals and objectives beginning with general statements followed by more specific objectives for each goal which are in turn succeeded by an even more specific target.

An example of such a sequence is as follows:

1) To Improve the Quality of Education

One of the objectives under the goals is:

1a) To increase student interest through a more extensive use of available media.

1ai) To increase the number of hours in which instructors use overhead projectors by 30%.

Study

Data collection and analysis is crucial to sound planning, yet is also very expensive in terms of time and money. One skill required of a good planner is the wise allocation of resources available for background study. Before data is collected, data elements should be defined precisely and the use of that data well understood.

The collection of data is a part of the process that can further define the nature of the problem as well as helping to refine goals and objectives. For instance, while reviewing current vocational education program offerings within a district, the planner may discover programs where very few students are finding jobs relative to total costs of instruction and the large number of students enrolled. While studying and assessing the local labor market, the planner might recognize significant demand for skills that local training institutions are not yet supplying. Chapters two and three of this monograph concern themselves with two important aspects of background study relevant to planning for vocational education -- the gathering of data on labor market supply and demand for occupations and student interest in occupations.

The place to look for guidance in study design is the planner's statement of goals and objectives. Two basic categories of information worth collecting include 1) data that helps to measure the attainment of the objective and 2) information which promotes an understanding of systems available to develop strategies for the attainment of objectives. If an objective is to maintain a placement rate of 60 percent in a vocational program, then placement data is crucial for planning. But information and concepts which promote an understanding of how the local labor market works and how students choose programs will also be crucial to the development of the plan.

Plan

The plan is a strategy or set of steps designed to help the planner and institution meet stated objectives with efficiency. The plan can take a number of different physical forms. It may be a list of activities, a budget, an organization chart, a time table or a combination of all of these forms. A plan for vocational education may include:

1) A table of desired enrollment figures by program;
2) A list of dollar allocations to each program;
3) A set of procedures or steps which several members of the instruction or support staff should follow to meet stated goals and objectives;
4) Some intermediate goals which define the completion of tasks.

Test

One step often overlooked in the planning process is the plan test. Before a product is placed on the market, it is tested in a simulated environment to determine if it performs as intended. A plan should be tested by the simulated activation of the strategies listed in the plan. This will inevitably require some guesses concerning what will result from the completion of a certain action, but just working through the plan will help to clarify areas where the plan is weak or tenuous. It is occasionally possible and usually very desirable to devise and test alternative plans to identify which will best meet goals and objectives.

Planning agents can further test a plan by assuming some unexpected catastrophic occurences to see how badly such events might affect the plan. What, for example, would happen to plans to meet desired placement rates if a major employer moved out of the region?

Implementation

The planning process can be an exercise in futility and the plan can be doomed to gather dust on another shelf unless the strategies laid out in the plan are followed and it becomes an integral part and reference for day-to-day decision-making. Implementation is often the most difficult part of the process and the step where many planners fail in their efforts. It is the step where proposed plans intersect with the lives of people, the values, perceptions and in-grained interests and ways of doing things held by people, institutions, and bureaucracies.

Implementation in its pure form means merely to interpret and follow the set of strategies laid out in the plan. In reality, of course, the system will come up against some situations which were not anticipated by the planners. As a result, the plan needs constant review and revision based on new information and changing situations.

At the implementation level planners meet face to face with the human scale and far-reaching implications of their plans. For instance, it is one thing to recommend that a vocational program be discontinued on the basis of virtually no local market demand for the particular occupation related to the vocational training. But at this level the planner also must deal with the problems and decision of whether to lay off the instructor or instructors involved in the program or keep the program intact if it seems to generate strong student interest despite the dearth of job opportunities, or retrain instructors for another vocational program.

Evaluation

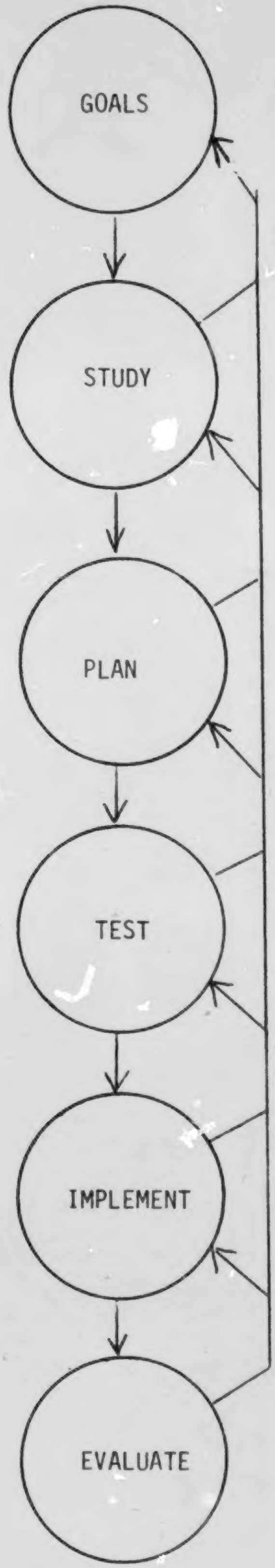
Evaluation is simply measuring the degree to which the goals and objectives of the plan are being attained. Planning should not be viewed as a procedure with a beginning and an end. Rather it is a cyclical process in which a new cycle begins periodically. In order for the cyclical process to function, the capacity of previous plans to meet objectives must be clearly measured so that plans can improve with each cycle.

In addition, with actual implementation experience, ideas for improving, expanding or modifying goals and objectives, data collections, plans, alternatives and testing begin to emerge. This is the stage where the concept of feedback in planning becomes important.

For simplicity, perceive the planning process as a set of steps to follow, but realize that the process may not always follow such a rigid sequence. Feedback exists throughout the system from all steps (see Figure I-1). If data collected in the study phase indicate that the objectives stated in the previous step are unrealistic, then one needs to temporarily return to the goal formulation stage to rethink the objectives and targets of the vocational program. Likewise, while the

FIGURE 1-1

PLANNING PROCESS


GOALS
STUDY
PLAN
TEST
IMPLEMENT
EVALUATE

plan is being formulated, one may realize that more study needs to be done in certain areas. The obvious purpose of the plan test is to see if the plan needs more work before implementation, and during implementation unforeseen factors and situations arise which require plan or goal revisions. The principal function of evaluation is to provide feedback to be used to improve future plans.

Application Of The Planning Model To The Vocational Education System

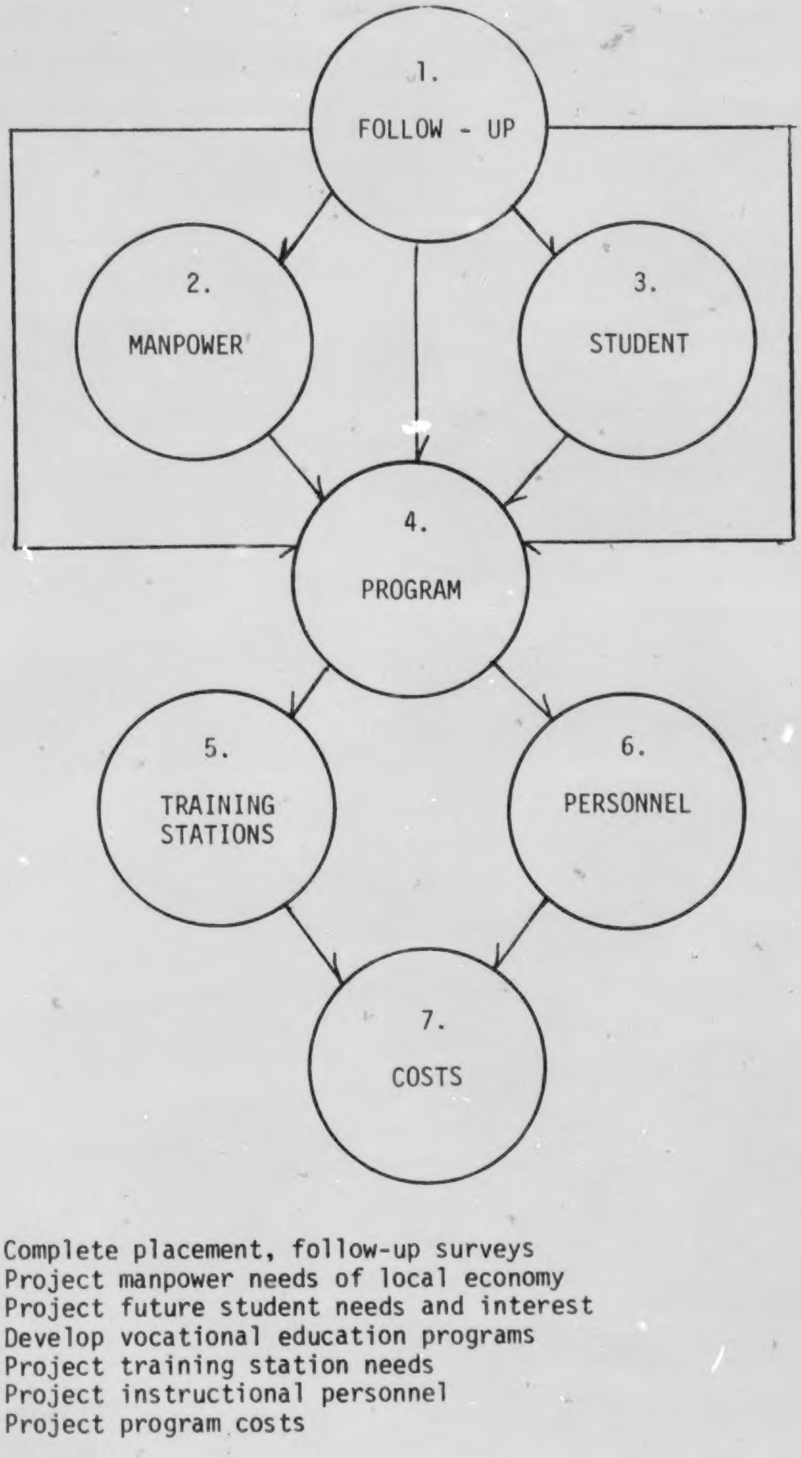
A planning system designed for vocational education could take a number of forms depending on the goals which the administrators see for their programs. One sample planning model based on typical vocational education system goals is shown in Figure I-2.

The goals of such a system are to develop vocational programs which:

1) Serve the needs and interests of the students
2) Place graduates in situations where their skills can be utilized
3) Serve the manpower needs of the economy
4) Operate within the constraints of limited financial and human resources

Some of the information needed to develop plans for the goals listed above would include indication of future student needs and interests, future manpower projections of the availability of instructional staff by program, indications of types and number of training stations required for various programs for various levels of enrollment, information of personnel, capital and consumable costs, placement and followup data. This information is not accessible in its needed form. Rather, a much broader base of data is required from which the calculations can be made to provide

FIGURE 1-2


1.
FOLLOW - UP
2.
MANPOWER
3.
STUDENT
4.
PROGRAM
5.
TRAINING STATIONS
6.
PERSONNEL
7.
COSTS

1. Complete placement, follow-up surveys
2. Project manpower needs of local economy
3. Project future student needs and interest
4. Develop vocational education programs
5. Project training station needs
6. Project instructional personnel
7. Project program costs

future estimates and other requisite information.

The plan to accomplish the goals indicated above should include two major parts:

1) A long-range plan (up to five years into the future)

2) An annual program plan

The long-range plan should be developed first and updated annually. The annual program plan should be developed in more detail but also viewed as a mechanism for promoting the implementation of the long-range plan. Both plans will include such things as: projected enrollment by program, projected instructor needs, facility needs and costs. The annual program plan will contain details concerning contents, goals and instructional objectives of each vocational program.

The Current State Of Vocational Education Decision-Making

Traditionally, vocational education decision-making has been characterized by short-term reactions to current perceived needs and resources that become available. Few vocational education systems have begun in a sophisticated way to address such questions as the long-range outlook for enrollments, the availability of facilities and financing, future prospects for various occupations as well as local supply and demand for labor. Frequent criticisms made against vocational education include the charges that decisions are made without adequate data support, alternatives are ill defined, and dollars are expended without the capacity to apply cost-effectiveness analysis.

Other issues raised are the fact that programs and offerings often follow dollars and funding sources rather than long-range community needs. Large-scale funding for regional training centers has greatly expanded options and opportunities for students, but these attractive facilities can be restrictive if they only give the local school system a predetermined choice on an allocation basis. Without adequate evaluation of student interest and local labor demand and supply, students may be counseled into program slots rather than counseled towards their interests and talents. Worst of all some students find themselves training for jobs which are already obsolete or non existent at the local level.

For the most part, local administrators are planning for vocational education using similar methodology to that practiced fifty years ago. A current training need is identified through survey, request or because funding is available, or because it is successfully offered somewhere else. If a trained, certified teacher and space is available, and if enough students sign-up, and if the cost is not too high, the course will be offered.

Planning for vocational education is one of the most complex educational planning problems due to the fact that all levels of government activity can influence and impact vocational programming and planning units -- the federal government, state government, multi-county planning units, intermediate districts and local districts. There is a further interface with non-educational agencies including other units of government, business and industry making the need for interrelationship and co-ordination paramount.

A whole host of other problems are brought in by changing times. Educational needs are changing rapidly. Secondary school enrollments are beginning to decline overall while specific geographic and subject areas experience growth. Increasing numbers of classrooms and school buildings stand idle while student needs for vocational education go unmet. The challenge for vocational education is to creatively plan for increasing, stable, or declining enrollments as the case may be and bring about innovative uses of existing facilities while monitoring new trends in the labor market that would affect vocational education.

Local vocational education administrators can no longer afford to be deterred from comprehensive planning because of the many variables inherent in the process, or because individual variables change with time, economy, technology, and governmental policy decisions, or because the variables are external to the school system. Only a few local school districts have planning departments and none have technically trained voc-ed planning staffs because specialized training programs do not exist. Needed is a planning technology developed to apply to a bank of data along with skilled personnel that can initiate and manage a comprehensive planning process.

The opportunities and challenges confronting the future of vocational education are numerous. This monograph presents a framework for comprehensive planning for vocational education. In it are considered the crucial components that must be taken into account -- manpower demand, student interest, curriculum development, facility and instructional needs, finance, space placement systems, and other governmental and private institutions affecting the entire process. Hopefully, it is the beginning of a planning technology that can help move the field of vocational education away from its traditional limitations and constraints.

II

THE LABOR MARKET

INTRODUCTION

As providers of employment skills, vocational educators are concerned with the capacity of their students to utilize skills on the job. The ability of the economy to absorb and employ individuals with given vocational skills is a critical area of long-range vocational planning. This chapter will focus on the area of manpower demand. A subsequent chapter will delve into the issue of student and community interests to give the vocational educator a feeling for how these important variables--manpower demand and student interest--might interact in the planning process.

Viewing the labor market as a marketplace where services are bought and sold, the two crucial forces affecting the functioning of the market are supply and demand. Supply and demand interact, however, within certain boundaries which define the market. On the one hand there is a geographical boundary and on the other there is a skill or occupational boundary.

The first section of the chapter will focus on how to define the geographic parameters of the local labor market. The second section will describe the occupational structure of the labor market. The third part will discuss the state of the art of manpower projections, and part four will describe how to monitor and project manpower supply.

Vocation Education And The Local Labor Market

Geographic Boundaries

"A labor market area consists of a central community (or communities) and surrounding territory in which there is a concentration of economic activity or labor demand and in which workers can generally change jobs without changing residence." This is how economic analyst E. Podolski defined the labor market area in an article which appeared in the 1973 (2nd series) of Michigan Manpower Quarterly Review. It is also typically how those in the field of labor and industrial relations have described the labor market area. This definition assumes that the worker is not going to move outside the local market in search of employment, or that if he should move, he will no longer be considered in the area.

Labor mobility encompasses the movement of labor between jobs, including all changes in the employment or job status that alter a worker's function or location in the productive and distributive framework. (Hunter, 1968)

What determines the labor market area in terms of geographic boundaries? One basic factor in defining the labor area is the relationship between the place of work and place of residence of the workforce. In other words, where do employees live in relation to jobs and how far do workers commute in order to get to work? The degree of commuting is, in fact, the primary measure of the existence of a labor market area. The Michigan Employment Security Commission (MESC) published a study based on

1970 Census data entitled, Michigan Commuting Patterns: By Place-of-Work and Place-of-Residence. This study sought to find the percentage of workers who commute from one county to another in getting to jobs. The overall picture illustrated the extent of mobility of the working population, and pointed out a trend towards multi-county labor market areas.

The researchers examined the number of employed residents of each county in Michigan using the following criteria: total employed residents of each county, the number and percentage working in their home county, the number working outside of the home county (out-commuting), and a category labeled "not reported." A final set of figures under the heading "non-residents who work in the county" reported the number of employees in each county that are non-residents and commute from other counties (in-commuting).

Several patterns emerged from the study reflecting the importance in labor market analysis of the federally-designated metropolitan regions in the United States called Standard Metropolitan Statistical Area's (SMSA's). In these one or multi-county regions focused on an urban area of 50,000 population or more there is a substantial amount of commuting to jobs from one point to another in the area. The urbanized part of the metropolitan area in the typical SMSA in the United States has greatly expanded creating many jobs outside the old settled core.

There are, however, a few difficulties in using commuting habits and the SMSA's in seeking to define labor market areas. First, the data used is based on the 1970 census and pre-dates the energy crisis and oil embargo. What effect have higher gasoline prices had on commuting habits, and what changes could be expected if energy prices rise even further? These possibilities are important for the vocational planner because higher energy prices could greatly reduce the territory in which a recent vocational graduate can realistically search for a job.

The reluctance of workers to move outside of a labor market in order to change employment and the current economic trends lead to the reasoning that commuting patterns still hold the key to determining geographic boundaries of labor areas. The MESC study points to the importance of the SMSA as one way of defining a labor market area.

For most of the U.S., an SMSA is a county or group of counties which contain at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of 50,000 (the smaller of which must contain at least 15,000 inhabitants). In addition to the county or counties containing such cities, contiguous counties are included if, according to certain criteria, they are socially and economically integrated with the central city. Exceptions to this standard definition of the SMSA found in census reports are New England where the SMSA is made up of a city of 50,000 population or more and the surrounding town or towns, and in Alaska where there are no counties, only large townships.

The government created the SMSA designation "to meet the need of presenting general-purpose statistics by agencies of the federal government, in accordance with specific criteria for defining such areas." In attempting to organize vast amounts of statistical information the government was confronted with the problem of merging several diverse points of reference (for example, municipal boundaries, school districts, counties) into uniform areas which several different fields of interest can utilize. In 1949 the term SMA (Standard Metropolitan Area) replaced four different sets of definitions: 1) metropolitan districts, 2) metropolitan counties, 3) industrial areas, and 4) labor market areas.

All of these areas overlapped, yet were different enough to prevent using different sets of data without some degree of manipulation. It was impossible to relate statistics on population, industrial production, labor force, and other series of data for the area in question.

A prime objective of the census bureau became making it possible for all federal agencies dealing in statistical information to use the same boundaries in analyzing metropolitan problems. In 1960, the term SMA was changed to SMSA according to the 1967 OMB publication "In order to more accurately describe the objective of the definitions."

The SMSA concept is one of describing and gathering information from an area which is an integrated economic and social unit. The degree of commuting which occurs between outlying counties and the county containing the central city is the chief indicator in determining the degree of economic integration.

In 1972, there were 243 SMSA's in the United States and four in Puerto Rico. As the population in certain areas expands, additional SMSA's will come into existence.

Another approach to delineating economic and labor market areas are the federally designated State Economic Areas (SEA's). SEA's consist of single counties (or groups of counties) with similar economic and social characteristics. Where SMSA's occur, the counties making up the SMSA are designated as the SEA. The boundaries are such that each state is divided into as few parts as possible, with each part having certain characteristics which distinguish it from adjoining counties (See: Subject Reports - State Economic Areas 1972; part of the U.S.

Census).

In establishing SEA's, the following socio-economic factors were considered: industry, commerce, demography, climate, physiography, culture, and factors more directly related to the production and exchange of agriculture and non-agricultural goods. SEA's are useful for a variety of studies for which state data is not sufficiently refined, and in instances where there is considerable difficulty in manipulating county data.

In the 1970 census, there were 510 SEA's in the United States. These areas are useful in comparing regions of the state according to economic criteria. Since several counties can and are grouped into each unit, SEA's tend to be too large to use in a meaningful way for employment projections. There may be certain occupations in which it would be meaningful to use a larger area of reference but this is not realistic when considering the characteristics of recent vocational education graduates.

The major contribution of the SEA is that every geographic area in the United States is included in an SEA. The SMSA concept only covers urban areas and environs, eliminating from consideration many rural counties.

A third method for defining economic relationships on the local and regional level is illustrated by the Bureau of Economic Analysis Areas (BEA). The composition of Bureau of Economic Analysis (BEA) areas are described in Volume I of the OBERS Projections,1972 prepared by the U.S. Department of Commerce. BEA areas are based on central place theory, which states that cities act as hubs of wheels, with the outlying area (hinterlands) funneling local economic activity into the hub. Applying this theory to the economic data relating to the counties of the U.S., the result (in 1972) was the delineation of 173 regions throughout the country. Implicit in this design, is that each BEA contains its own supply and demand of labor, so that cross-regional commuting is kept to a minimum.

In establishing these areas, the first step was to identify the economic centers. From the start, SMSA's were selected as the logical nuclei. Once this had been dispatched with, it became a matter of selecting those centers upon which the remaining (non-SMSA) counties focused economically. Again, an important criteria used was journey-to-work or commuting information supplied by the census. Unlike the SEA's the BEA regions include far more counties than those which compose SMSA's. For example, the Grand Rapids, Michigan SMSA includes only two counties, yet the BEA for the Grand Rapids area includes 21 out of the 83 counties in Michigan. This does not mean that all those counties have workers who commute to the immediate Grand Rapids area. It is an indication that enough import and export of goods and services takes place between all of those counties, with Grand Rapids as the catalyst, that all need to be included within the same area. This design is useful for reviewing regional characteristics across the U.S. Newspaper circulation, telephone calls, postal habits of the residents, and other criteria also play a part in determining regional economic or labor market boundaries.

Delineating the Local Labor Market

From the foregoing material, it would appear that counties and SMSA's are logical building blocks for considering any type of labor area. Each of the market-area designs discussed is partly based on the following inquiry: how far are people willing to commute, and where are they commuting to in order to get to work? The BEA and SEA formats incorporate the SMSA's into their program, finding it an already abundant data source. It would seem worthwhile, therefore, to utilize the SMSA in designing service areas for vocational educational comprehensive planning.

Virtually every kind of data concerning population and its socio-economic characteristics are available at the SMSA level. When state employment security agencies publish local job-demand lists (depicting job openings and outlook in the local area), the SMSA or county is utilized as a base.

It was implicit in the definition given to labor market area in the beginning of this section (an area in which a worker can change jobs without changing residence) that the possibility of moving to search for employment is downplayed. Migration is not given much consideration because there seems to be a great reluctance on the part of graduates of vocational education programs to move. School planners and placement officials must realize that job seekers are 18 and 19 year old graduates of high school vocational education programs with little or no experience spent away from home. Vocational programs have been designed in the Battle Creek, Michigan, area in which the participants were aware from the start that the employment opportunities would require a change of residence. Follow-up studies indicated that nearly all graduates elected to remain in the immediate area rather than move. This same pattern seems to be reflected throughout the state and across the nation. For entry-level occupations open to recent high school graduates, migration is not one of the options being considered.

In defining the planning area which local school superintendents need to consider, planners should look at where the enrollees live in the area, and where they seek employment and are placed upon graduation.

Of the various types of planning regions considered in this section, the SMSA and county offer the best design in terms of a labor market service area. There is sufficient industry within the SMSA to program diversity in vocational education offerings, and commuting patterns are such that job seekers have accessibility to a fairly wide range of employment opportunities. Abundant census data pertaining to employment and industry is available on the SMSA level, and SMSA's conform closely with labor market areas analyzed by most state labor departments.

It is important to realize, however, that SMSA's cover only urban centers and surrounding counties or towns which have an urban area population of 50,000 or more. Most states have vast areas that are not part of an SMSA and some states have only one or two such regions. In the non-SMSA area the county should serve as the base for labor market analysis and placement service area. Various census publications such as County Business Patterns report business, industry, and employment data on the county level.

A key point in favor of utilizing the SMSA or county as a base for vocational education planning is the frequency with which graduates find the first job in commuting range of home. Recent graduates of vocational education programs have been shown to be reluctant to leave the area to obtain the first job, and are usually placed within the county or SMSA.

Occupational Boundaries

The labor market also functions within occupational boundaries, which is to say that supply and demand for labor refers to the availability and need for people with particular occupational skills. There are several systems of occupational classification published and utilized by various agencies of the federal government. All of the systems first organize the occupational structure into six to ten broad categories and then, through use of digits, break down each major group into clusters and from clusters into very specialized occupational titles. The most complete classification of systems, the Dictionary of Occupational Titles, lists and gives precise descriptions of duties, requirements, and functions of nearly 22,000 occupations.

Unfortunately, people do not move easily between occupations so that the over supply of labor in an occupational category cannot help to satisfy the demand for labor in another. When such a situation exists, people in the over-supplied occupations are unemployed, and their condition constitutes one form of structural unemployment. A major goal of modern vocational education is to help people avoid this personal misery and aid the nation in overcoming the economic waste of structural unemployment through better job placement and retraining opportunities. To do this, the vocational administrator needs an indication of what the occupational structure and labor market will look like in the future.

The employment outlook for occupations is based on the long and short term prospects for individual industries that contain a range of occupational types. To translate industry prospects for growth into occupational demand a system of classification is required to combine industry projections with the specific mixture of occupations in each industry.

Further classification systems match those occupations with vocational programs.

The remainder of the section briefly describes the major occupational classification systems, the Office of Education classification of vocational instructional programs, and a table which matches vocational education programs with occupational titles. Outlined are the Bureau of Census occupational classifications, the Department of Labor's Dictionary of Occupation Titles (DOT) and the Office of Education's classification of vocational programs and the conversion table which matches occupational titles with vocational program titles. Each of the systems is reviewed in more detail in the Department of Labor publication Matching Occupational Classifications to Vocational Education Program Codes (1975).

Occupational Classification Systems

For the bureau of the census classification system, responses to interviews concerning occupations conducted during the 1970 census were classified into 441 occupational categories and cross tabulated for 227 industrial categories. The 441 occupational categories have been arranged into 12 major groups and identified by three-digit and single letter codes. For example, the major group of Professional, technical and kindred workers are identified by the letter N and listed between the digits 001 and 195. Managers and administrators, except farm are also organized under the letter N, but individual occupations listed between digits 201 and 245. The other 10 major groups are salesworkers, clerical and kindred workers, craft and kindred workers, operatives, except transport; transport equipment operatives, laborers, except farm; farmers and farm managers, farm laborers and farm labor, service workers, except private household; and private household.

The Classified Index of Occupations and Industries presents the individual job titles for each category in the census occupation classification system.

Approximately 22,000 occupations are defined in the Dictionary of Occupational Titles prepared in 1965 by the Department of Labor. Each individual occupation in the DOT has a six-digit code designating the kind and level of work performed. The first three digits of the code arrange jobs according to some combination of work field, purpose, material, product, service, subject matter, generic term and industry. The first digit arranges jobs into nine broad categories from 0 to 9 taking in the major groups of professional, technical, and managerial occupations; clerical and sales occupations; service occupations; farming, fishery, forestry, and related occupations; processing occupations; machine trades occupations, benchwork occupations, structural work occupations, and miscellaneous occupations. The second digit breaks down the major group into divisions and the third digit into a common group. For example:

First digit: Category 2 (clerical and sales occupations)
Second digit: Division 20 (stenography, typing,filing, and related occupations)
Third digit: Group 201 (secretaries)

The fourth, fifth, and sixth digits of the code should be of great interest to vocational administrators and planners because these digits specify worker functions in relation to data, people, and things. Each one of the job requirements is ranged in a hierarchy and each job identified with the highest appropriate relationship for each of the three job-requirement classification. For instance the hierarchy under digit 4 which is functional relationship of the employee to data is as follows:

Data (4th digit)

0 synthesizing
1 coordinating
2 analyzing
3 compiling
4 computing
5 copying
6 comparing
7,8 no significant relationship

Digits five and six, the functional relationship of workers to other people and things also have eight part hierarchies describing the nature of job duties in these areas. What emerges from the description of occupations with the last three digits is a fairly complete picture of major functions, skills and requirements of each occupation.

Matching Vocational Programs with Occupations

Codes for instructional programs in the Office of Education classification scheme are intended to help local and state education agencies identify, classify, and describe information about subject matter and curriculum activities. Twenty-two subject matter areas are identified in the code and of these, seven are frequently referred to as vocational-technical including Agriculture, Distributive education, Health occupations education, Home economics, Office occupations, Technical education, Trade and Industrial occupations. Each major group is assigned a digit for identification and specific segments, subgroups, divisions, and individual occupations of each major group are described by subsequent digits up to as many as eight or ten digits for very specialized occupational programs.

With the increasing interest in manpower planning on the local, state, and national levels it became clear several years ago that a link was needed between manpower data published by the Bureau of Labor Statistics on projected employment by occupation and data published by the Office of Education on enrollments in vocational programs. The difficulty of translating occupational projections into specific curriculum needs has previously hindered the use of projections for educational planning.

In order to bridge this gap, the federal agencies set up a conversion table that matches Department of Labor, Bureau of the Census codes, and the Dictionary of Occupational Titles with Vocational Education program titles. The report describing the conversion table points out that the match of occupations with vocational education programs has some flaws and imperfections. It states that the conversion table should only be used as a temporary measure since the Office of Management and Budget is preparing a new occupational classification system such that each of the agencies' classification systems will be comparable with the new system. Each classification system would also be comparable to each of the other systems as well.

Projecting Labor Market Demand by Occupation

With a basic understanding of the labor market in terms of geographical and occupational boundaries, the vocational educator is ready to explore a subject crucial to planning for vocational education -- occupational projections and employment demand. The whole field of labor market projection is undergoing a period of rapid expansion and intensive research stimulated by recent problems of the national economy and the mismatch between the skills many individuals are obtaining and the actual job opportunities that exist. During the next decade, vocational planners and others concerned with the functioning of the labor market can expect increasingly sophisticated occupational projections both on national, state and even the local levels.

This section of the chapter is designed to help the vocational planner to become familiar with the techniques used by economic planners and government agencies to make occupational projections. It also provides information and suggestions on where the vocational planner can turn for relevant data concerning the occupational outlook and demand for labor on the local level, particularly the local vocational education service area.

The process of projecting occupational demand seems to function best, given current data sources, in two steps. Step one is to foretell the employment outlook of a local labor market by industry, and step two is to translate that into occupational demand using some form of industry-occupation matrix.

Projections from Manpower Models

A debate within the field of employment projections focuses on whether it is better to use a local versus a national approach to local projections. The typical initial reaction of a local official to projections based on national econometric models is "how could the computer know that the National Widget Company was going to close down and relocate? The projections must be wrong since they did not take that into account." Although intimate knowledge of local situations is clearly beneficial, changes in local economies are essentially responses to national economic trends. Better insight into the impact of these trends on future local employment can be provided through models which utilize national driving variables. In fact, although the econometrician may not have known specifically about the intentions of the National Widget Company, the forces which caused the company to relocate may be considered in the econometrician's models so that the model's projections do take into account its actions.

Econometric Models

An example research underway in the area of employment projection models is being developed at the University of Michigan by Dr. Malcolm Cohen of the Institute of Labor and Industrial Relations. His model, developed with the aid of the Michigan State Manpower Bureau, projects employment by industry five years into the future for 22 industrial groups.

The model simulates the relationship of national interest rates and five other national variables on the prospects for each of the industrial groups considered. Then taking current labor employment levels, it traces future patterns based on the projected growth levels for each of the local industries. The parameters which simulate the relationships of national variables on industrial growth rates are calibrated by using the model to project current employment levels using past data. These current projections are then compared to real employment figures to refine parameter values. The model developed by Cohen is currently being used to project employment five years into the future for 14 labor market zones in the State of Michigan.

Projecting Employment Through Local Economic Analysis

Foremost among techniques to analyze the local economy is the community economic base study, an effort often undertaken by urban planners to forecast future growth in industry, employment, and population in order to anticipate resulting changes in demand for services and land use in a given community or metropolitan area. This type of study looks at the basic industries in a given community that sell products outside the area as triggers for economic and employment growth in the rest of the local economy. An economic base study useful to the vocational planner would focus on the SMSA or county which, as previously mentioned, are the most functional labor market boundaries for vocational education planning.

The economic base of a community consists of those activities which provide the basic employment and income on which the balance of the local economy depends. An economic base study identifies the basic sources of employment and income and provides an understanding of the source and level of all employment and income in a community. Base studies view the local area as a trading unit, engaged in importing and exporting goods and services. Industries that produce for export to the outside are prime economic movers in the community, the source of new wealth that is imported into the community. Other industries can be expected to grow, maintain, or decline with the export or "basic" sector. An increase in basic employment will eventually stimulate a proportionate increase in jobs in the service, retail, local government, and other "non-basic" categories. On the other hand when an export factory closes, local retail merchants feel the impact as laid-off factory workers have less to spend.

Total income changes in the community are then a function of increased "export" and local investment income times a multiplier based on the local marginal propensity to consume times income created by local consumption sales. Eventually income increases generate total employment increases, and from these industrial employment projections, occupational forecasts can be obtained by utilizing an industrial-occupational matrix.

The economic base study is a valuable tool in learning to understand the basic forces existing in a community that serve as catalysts for economic and employment growth. Although economic base analysis is far too expensive and time consuming for vocational education planners to undertake, these studies are often available at the local city, county, or metropolitan planning offices. Usually an economic base study will attempt to make projections of local economic growth for five, 10, or 15 years into the future, a time frame useful to the vocational educator in undertaking long-range planning. Current knowledge of the economic base of the local labor market is essential in understanding the occupational composition of the labor force and local demand for labor.

Projecting Demand Using Data From Local Placement Service Follow-Up Reports

One of the most accurate and easily obtainable measures of local manpower demand is found in data from local placement service follow-up reports. Follow-up reports on the placement of vocational education students into jobs are increasingly required by the federal government and numerous states as a condition for funding. At least two states, Virginia and Florida, have enacted legislation making placement services and follow-up studies in the local school system mandatory. More states are considering similar legislation or at the very least providing more inducements for the development of placement services.

Although follow-up reports are often viewed by vocational educators as added paper work that has to be done, such studies contain valuable insights into the local labor market that should not be overlooked. "Schools would do a much better job of vocational planning if they used their follow-up studies on students. They are required by the state, but too often they are done, and end up on the shelf," notes Jack Martin, Director of Placement for the Flint, Michigan school district.

Follow-up studies are particularily important reflections of the labor market demand for local vocational education students because numerous studies have shown that recent graduates of vocational programs usually obtain the first job within commuting distance of home. A recent summary of follow-up reports of Michigan high school students showed that 91 per cent of those entering the work force immediately after leaving high school found jobs within a 25 mile radius of their homes. It appears that there are strong economic and social pressures keeping first-time job seekers from looking for work outside of the local labor market.

Since the federal government and many states already require follow-up data on placement of vocational education students from three months to a year after a student completes or leaves a program, vocational administrators should take advantage of this information to aid in making assumptions about local occupational demand. A placement program which becomes an established institution in the community, familiar to local business and industry, can record and compile accurate detailed information on local manpower needs.

For instance, a public school placement program in Flint received 984 job orders during the nine-month period from October, 1973 to July, 1974. These job orders were then classified into broad vocational clusters such as food service, retail sales, and business/office. Such information combined with follow-up reports on placement of program graduates can reliably point out areas where vocational offerings are badly out of kilter with local labor market demand. This information becomes increasingly valuable when maintained over a period of years and trends in occupational growth or decline begin to emerge.

Placement is increasingly viewed as one measure of school accountability, providing an indication of vocational program success and feedback to curriculum for the purpose of updates and revisions.

Other Sources For Information on Future Employment

Along with national industrial projections, local economic base studies, and follow-up reports, there are several other techniques for gaining information on the type and level of future employment at the local level. The Area Skill Survey approach and several variations of this employer survey have been utilized in the past by the U.S. Department of Labor and vocational educators to determine occupational outlook on the local level. The area survey is simply a 100 percent poll of all employers in the labor market area asking for a projection of the firm's employment needs over a given period of time. The skill survey is fairly inexpensive to undertake because of the bulk mailing rates available to school districts. In most cases, such surveys generate a high return rate especially from the largest employers who account for the bulk of local employment.

In recent years, area skill surveys have been used more infrequently because past results have tended to be inaccurate. The basic problem emerging from studies performed by the government and local groups is the fact that employers tend to grossly understate employment needs during periods of recession and overestimate employment needs during good economic times. Employers also sometimes overestimate employment needs in order to encourage educational institutions to train adequate numbers of personnel with the skills needed by a particular industry.

Another very empirical source of information on future employment needs is a continuing survey of newspaper want ads from newspapers within the labor market area. Although help wanted ads cannot provide exact numbers on employment projections in a form that can be used by the vocational planner, want ads do give indications of trends and point to areas of high and low demand locally.

The National/State Industry-Occupational Matrix

In response to the demand for a reliable method of projecting occupation employment, the Bureau of Labor Statistics has developed the National/State Industry-Occupational Matrix. The matrix is not a projection in itself but a tabulation of occupational employment by industry. This works two ways: The matrix shows how employment in each occupation is distributed throughout industry and the occupational composition of each industry. The basic form of each is illustrated in the following table:

NATIONAL INDUSTRY-OCCUPATIONAL EMPLOYMENT MATRIX, 1970 AND PROJECTED 1980
(PERCENT DISTRIBUTION OF INDUSTRY EMPLOYMENT BY OCCUPATION)

OCCUPATION	PETROLEUM REFINING		OTHER PETROLEUM & COAL PRODUCTS		RUBBER & MISC. PLASTIC PRODUCTS		RUBBER PRODUCTS		MISCELLANEOUS PLASTIC PRODUCTS	
	70 Ratio	80 Ratio	70 Ratio	80 Ratio	70 Ratio	80 Ratio	70 Ratio	80 Ratio	70 Ratio	80 Ratio
CLERICAL & KINDRED WORKERS	19.69	17.27	20.56	23.59	13.16	13.98	13.38	13.81	12.95	14.10
STENOS, TYPISTS, SECRETARIES	5.95	5.43	7.00	7.85	3.37	3.29	3.30	3.39	3.45	3.22
OFFICE MACHINE OPERATORS	1.64	1.96	.89	1.70	.69	.84	.95	1.33	.43	.48
OTHER CLERICAL, KINDRED WKRS	12.10	9.88	12.67	14.04	9.10	9.85	9.14	9.09	9.07	10.40
ACCOUNTING CLERKS	1.12	1.04	.77	1.06	.50	.46	.50	.50	.50	.44
BOOKEEPERS, HAND	.93	.88	.87	.89	.55	.54	.22	.21	.87	.78
BANK TELLERS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CASHIERS	.11	.08	.11	.15	.05	.03	.11	.07	.00	.00
MAIL CARRIERS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
POSTAL CLERKS	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
SHIPPING, RECEIVING CLERKS	.23	.18	1.73	1.96	2.10	2.53	1.66	1.25	2.53	3.46
TELEPHONE OPERATORS	.35	.29	.17	.17	.11	.10	.13	.14	.08	.08
CLERICAL AND KINDRED, NEC	9.36	7.40	9.02	9.82	5.79	6.18	6.51	6.92	5.09	5.65

Initial attempts at developing the matrix in the 1950's grew primarily out of a concern for the national defense implications of occupational employment. More recently, a strong interest has developed in projecting manpower needs for other purposes, including federal retraining programs, vocational and career counseling and specific programs to combat unemployment. Recent legislation under the Comprehensive Employment and Training Act (CETA) mandates the development of local occupational employment data. Earlier attempts to provide this centered around the Area Skill Surveys; however, after several years of testing, it was decided that the matrix system would provide a more reliable and less costly method.

The basis of the method is to develop a national matrix, based primarily but not exclusively around Census data. These data are supplemented, localized and updated by periodic surveys and other information from state employment agencies. Although the occupational patterns of many industries are relatively stable over periods of five to ten years, it is clear that occupational patterns change with the advance of technology and changes in the supply of workers in each occupation. Therefore information from the matrix must be supplemented by other sources. The strength of the matrix system lies in the fact that, while statistics on employment by occupation are relatively thin, there is a great deal of information on total employment in detailed industries. That is, the technology of directly projecting employment by occupation is not well developed, whereas projections by industry are.

The projection of future employment and output by industry seems to be inherently easier than direct occupation forecasts, especially for the range of jobs generally considered as vocational employment. Since these are closely linked to industrial activity and most industrial reporting (e.g. to the government) is done by firms, a logical process is to project industrial activity, then translate that level of activity into labor force requirements. The matrix system is designed to provide the best method for accomplishing this.

Updating and Localizing the I-O Matrix

Although the Bureau of Labor Statistics Industry-Occupational matrix provides the best available method for long-range national forecasts, improvements and adjustments are necessary to use the matrix at the regional or local level. This is because the specific industrial composition for localities may differ significantly from the national averages. Also, structural changes in industry which have occurred since the 1970 Census are not accurately reflected.

To enable the matrix to be used for occupational forecasts on the state and regional levels the Bureau of Labor Statistics, in cooperation with state employment security agencies, has begun a program of updating and localizing the matrix. The major tool being used in this effort is the Occupational Employment Statistics survey.

The Occupational Employment Statistics surveys involve the collection from employers of basic data on current occupational employment. The data are collected by the participating state employment security agencies (presently about 30 states are included in the program). The surveys are presently being carried out over a three-year cycle: manufacturing industries the first year, nonmanufacturing industries excluding trade the second year and trade the last year. Thus far, the surveys have provided current employment data for over 2,000 occupations.

The intent of the program is to provide a localized matrix for each state and substate area (usually Standard Metropolitan Statistical Areas) of 250,000 or more population. This will be the basis for future occupational forecasts.

In contrast with earlier methods, the newer localized matrices will be available only on computer data tapes or cards. Thus any organization wishing to use the matrix for current projections must possess capabilities for computer analysis. Under the existing system, state employment security agencies will be responsible for developing occupational forecasts from the matrix for both states and regions.

State agencies may also use other current occupational information to localize the matrix. This primarily occurs where estimates for some professions are provided either from professional groups (such as medical associations) or from licensing agencies which by law are required to maintain a count of certain occupations. These estimates are also used to prepare forecasts for some occupations outside the I-O matrix.

Labor Market Supply

The National Picture

Demand for workers is only part of the crucial information needed to project the actual ability of a vocational system to place its program graduates in the labor market. The other most important variable in the equation is labor market supply, or the number of trained workers who will be competing for the openings in a particular occupation. Labor market supply for the economy as a whole is the sum total of workers currently employed or actively seeking and available for work. The supply side of the labor market is basically made up of four components. These include: (1) the size of the population, (2) the proportion of the population which participates in the labor force, (3) the number of hours per year that labor force participants devote to market work, and (4) the skills and abilities that workers bring on the job.

Each of these four components is dynamic and constantly changing. For instance, the post-war baby boom which lasted through 1957, is largely responsible for the tremendous number of new entrants into the labor market in recent years. This trend which began in the late 1960's will last through the early 1980's. Overall labor market supply in particular age groups is largely a function of aggregate population and past birth rates. The labor force participation rate is linked to aggregate population to yield the actual labor supply. The labor force participation rate for various segments of the labor force has changed dramatically in recent years. Women, for example, now spend about 23 years of their lives as paid members of the labor force, whereas in 1900 the average woman spent only five years in the labor force.

Participation rates of older men have declined significantly in recent decades due to social security legislation and improving pension plans, while rates have also declined for men in the 18-24 age group as this category increasingly spends more time out of the labor force gaining further education and job training.

The number of hours worked per year by members of the labor force is also a dynamic variable, one which responds to factors such as the impact of inflation on disposable incomes, rising incomes, and increasing appetites for more leisure time. The fourth component of labor market supply -- the skills and abilities that workers bring to the job -- is in essence the impact that all the educational and training institutions have on the availability of skills in the labor market. The output of these educational and training institutions on the local level along with local population data are the two components that should most concern the vocational education planner and administrator. Although hours worked and labor force participation rates do vary from locality to locality, these factors usually are responsive to national trends. An awareness of national trends such as the increasing rate of labor force participation by women is useful to the local planner.

Local Market Supply

Once the vocational education planner knows the amount of demand by occupation in the local labor market, one needs to get an idea of the supply that will exist to fill those jobs. Supply is made up of the current labor force in a market area plus net entry of potential new employees. The word "net" is used because some people will leave the ranks of any occupation through retirement, death, or by making a change to a different occupation. These exits occur at regular rates and are usually fairly predictable. The more difficult part of the equation is that dealing with labor market entry.

Individuals enter the ranks of any occupation from three pools. They are:

1) In-migration into the labor force
2) Entry from outside the labor force
3) Newly trained individuals

As discussed earlier in this chapter, net migration among graduates of vocational programs is insignificant relative to other factors and can be safely ignored. Since vocational graduates are generally competing for entry level positions in-migration is not an important factor due to the reluctance of new graduates to search beyond the immediate labor market area for employment. In-migration could, however, be significant in areas where the local economy and employment is expanding very rapidly. Such areas acquire a "word-of-mouth" reputation nationally as high growth areas and older workers from other areas may in some cases compete with vocational graduates for entry-level positions.

Entry from outside the labor force is extremely difficult to calculate but is also insignificant for most occupations. What is referred to as the labor force is all individuals who either hold or are seeking jobs. People who are unemployed but not seeking work are not counted as members of the labor force. Often they stop looking for work because unemployment in their occupation is high and the chances of succeeding in the labor market are low. During periods of expanding economic activity, however, they may be induced to re-enter the labor force. Another prime example of entry from outside the labor force is the increasing numbers of married women with or without children who are entering the labor force.

For the most part, in-migration into the labor market area, and entry from outside the labor force are sources of supply that are difficult to calculate and not particularly important to the vocational planner. The principal source of labor supply of concern to the planner is that which is leaving training institutions throughout the region.

Area Training Institutions

To avoid situations where training institutions are flooding a local labor market with personnel in some occupations while not training enough skilled people in other occupations, the vocational planner must develop an awareness of the range, scope, and size of programs being offered at employment and training institutions throughout the region. In looking at the question of supply, the planner should consider the same labor market boundaries one would recognize in calculating demand; namely all the training institutions inside the SMSA, county, or other relevant designation.

To project the amount of supply in each occupation of concern to vocational educators requires a system of regional cooperation in which training institutions show enrollment figures by program. Relevant institutions would include secondary schools, area skill or career center, community colleges, private vocational schools, and CETA prime sponsors.

To date, very few regions have a cooperative system of reporting program enrollment and graduates on a regional scale. A major exception is Santa Clara County's Program Identification and Reporting Sub-System (PIRS) which is part of the County's overall Management Information System for Vocational Education Program Planning. The PIRS reports annually on the vocational education resources in Santa Clara County which train and prepare people for occupations in the world of work by identifying and describing all public and private formal occupational training programs serving the county. Exceptions include professional preparation requiring four or more years of college, apprenticeship training, home study, or military education. The system can be used by students, vocational counselors, school administrators and vocational education planners in the county to determine the kinds of occupational training conducted locally.

In developing its survey of the universe of occupational training programs in Santa Clara County, the local office of education contacted all public and private institutions listed in the Yellow Pages of local phone directories. In addition, inquiries were sent to the California State Department of Education requesting a complete listing of all private post-secondary schools operating in the county. All of the institutions on the list were sent a questionnaire which asked for an account of the following: (1) the number of students currently enrolled in each job training program, (2) the number of students enrolled during the past year, (3) the number of students the institution anticipates will enroll in each job training program during the coming year, (4) the maximum student capacity for each program, and (5) the probable number of program graduates who will actually enter the labor market during the survey period.

In most regions there are many public and private schools, public community colleges, private technical and business agencies, and special service agencies offering vocational training. Although some agencies have an awareness of the enrollment and output of other training agencies, many do not, and it is this lack of clear and accurate information that can lead to imbalances in local occupational supply. When an educator compares labor market demand projections with results from the local supply survey, a clear picture emerges of situations where over or under supply is likely to occur. This information can be of great use in determining which vocational programs should be expanded, cut back, eliminated, or created.

Summary

This chapter on vocational education and the labor market has been designed to present general concepts concerning labor markets and to emphasize the need for "hard data" relating to manpower information needed in planning for vocational education.

Researching the local labor market and discovering how it relates to vocational education comes at the "study" phase of the planning process. The first step in studying the local labor market is to delineate its boundaries. In most cases, the local labor market will logically coincide with an SMSA or county, units for which there is abundant economic, employment, demographic, and social data available through census and other governmental reports. The planner must also define occupational boundaries to determine what jobs within the local economy are relevant to vocational education.

Since education must be future-oriented, projections of future demand for various occupations must be made. Occupational projections should be made from an assessment of local and regional industrial forecasts, analysis of placement data, and national economic projections. Finally, the vocational education planner must compare labor market projections with local data and trends concerning supply.

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III

STUDENT INTEREST

Introduction

With a tight job market and an emphasis in recent years on education that is relevant to the world of work, there has been a significant increase in demand for vocational education and training of every sort. This new interest, occurring as the total student population is beginning to decline, promises to place more pressure on schools to provide adequate vocational education programs for all who are interested. Because this demand for vocational education by students is expected to continue, it is critical that program planners and directors consider both student interest in vocational education and the current and future employment outlook for program graduates.

The following chapter dealing with student interest is an attempt to critically define student interest in respective vocational education programs. The first part of the chapter is concerned with identifying and measuring the total number of students enrolled in a local school district and vocational system using several population projection techniques.

The second part of the chapter takes estimates on aggregate student enrollment in a local education agency and considers various surveys and tests to estimate what percentage of total students will be interested and are likely to enroll in vocational education courses.

Projecting Local School Age Population

Vocational education during the past fifteen years has experienced a period of rapidly expanding enrollments at both the secondary and post-secondary level. This annual enrollment increase, along with increasing societal support for vocational education at both the federal and state level, has virtually assured the resources to improve the quantity and quality of vocational education programs. In Michigan for example, twenty million dollars was provided in 1975 to reimburse local school districts for high demand and high cost programs. In the '60s the federal and many state governments endorsed the concept of secondary area vocational centers. School districts pooling resources to establish area-wide vocational centers have vastly increased the availability of high cost programs while at the same time making quality vocational instruction accessible for the first time to students from smaller, more rural schools. This progress has been in part a response to the increasing numbers of students entering the educational system.

Because vocational education requires expensive buildings and equipment and is expected to respond to both employment demand and student interest, it is imperative for the vocational planner to look ahead to anticipate conditions in the future. The number of students expected in the senior grades, as well as the number expected to be interested in vocational education, are factors which will significantly affect the type and size of a vocational education program. Some short-term and long-term methods of projecting student enrollment are discussed in the following pages. The methods discussed are: (1) cohort survival; (2) percentage of age groups; (3) dwelling-unit enrollment yield multipliers; (4) integrated state and local area school enrollment projections.

Cohort Survival Analysis

Cohort-survival analysis is the most widely used technique for projecting local school district enrollments. The technique has the advantage of providing projections by grade rather than aggregate, and can be used by school districts with differing geographic and demographic characteristics. In addition, the data required for use of the cohort-survival technique is available or maintained by most school districts. Only two pieces of data are required:

1) Number of residential births for the state, county or local school district by year. (A maximum of eleven previous years are required. These may be obtained from the State Bureau of Health Statistics.)

2) Enrollment figures by grade for the previous two to five years.

In order to make projections, a survival ratio is calculated over time for a specific grade to grade transition. For example, in 1975 the tenth grade in a school district had 100 students enrolled in tenth grade. In 1976, the eleventh grade in the school district had eighty students. The "survival-ratio" from tenth grade in 1975 to eleventh grade in 1976 is 80 divided by 100 or .8. Suppose this same school district had 120 students in tenth grade in 1976. How many students would we project for eleventh grade in 1977? By multiplying the previously calculated survival-ratio of .8 by the 1976 tenth grade enrollment, we would expect (.8 x 120) or 96 students in eleventh grade in 1977.

From this very simple example, more sophisticated uses of the cohort-survival technique can be constructed. School district projection models have been developed using a single year-to-year survival ratio, as illustrated by the example above. Another variation is the use of the average of five year survival ratios, as exemplified by the enrollment projection computer program developed by the Middle Cities Education Association at Michigan State University. A third approach is the use of a linear regression technique which identifies trends in past "survival ratios" and continues the trend into the future. All of these variations are useful to the local school district in projecting enrollments. Yet, regardless of which method the school district uses, certain assumptions concerning past, present and future conditions are required. Failure to satisfy these assumptions will result in poor results using the cohort-survival technique. The two most important assumptions are:

1) A constant net rate of in or out-migration within the school district must be maintained. Enrollment projections made in school districts with fluctuating rates of in and out-migration will not be as accurate as in locations where a constant rate of in or out-migration is maintained.
2) Boundaries of both the school district and the political subunit from which information on residential births is derived have remained constant in the past and will remain constant in the future. Boundaries which have been changed in the past affect the validity of the input data, and therefore reduce

the reliability of the projections. Boundary changes occurring in the future alter the unit being projected for and the resulting projections will be inaccurate.

The cohort-survival technique is most useful for one to five year projections. Projection of future enrollment beyond five years requires, in addition to the calculation of survival ratios, projections concerning the number of anticipated residential births. While assumptions must be made concerning the birth rate, efforts in the past have not been particularly accurate in predicting the birth rate at the national level; birth rates in local areas are likely to fluctuate even more dramatically.

Given these limitations concerning the use of the cohort-survival method, school districts should at least begin to calculate projected enrollments using this method. If local conditions are such that the value of the method is questioned, additional methods described in this chapter may be developed.

Percentage of Age-Group Technique

This technique for projecting enrollments is most useful where school district boundaries conform with political boundaries, or when school district boundaries have remained unchanged for a significant period of time. In order to use this technique the following information is required:

1) Knowledge of 1960, 1970 and projected 1980 and 1985 population by specific ages for a political boundary. For example, information regarding the population of ages 15-17 would be required to project secondary enrollment. In most states this information is available by county or city from a state agency dealing

with population projections such as a state planning department or office of management and budget.

2) Knowledge of enrollment in grades 10-12 for 1960 and 1970.

Using these two basic pieces of information the number of students in grades 10-12 divided by the number of individuals aged 15-17 can be calculated for both 1960 and 1970 and averaged. The resulting percentage can then be multiplied by the population projection for the age group in 1980 and 1985 to yield the final projection for grades 10-12. Note that unlike the cohort-survival technique, the percentage of age group technique does not yield projections by individual grade level, but rather yields information about aggregate or total enrollments. This method is most reliable when large population political units and school districts are used.

Dwelling Unit-Enrollment Yield Multipliers

This technique combines information on housing patterns within a school district with census information concerning the number of potential students to be expected by grade in the school district. Some school districts have initiated their own dwelling information studies in order to project enrollment. While this involves a great amount of time, it is well worth the effort for those communities whose land space are being developed rapidly, and also for those communities whose demographic characteristics are changing dramatically. As time passes, community characteristics change, often resulting in fewer (or more) children per dwelling unit as well as a smaller or greater number of occupied dwellings. This technique can yield information of use in considering school construction and facilities utilization as well as providing overall school district information on personnel needs and costs. The method is also a good check of the cohort-survival technique discussed earlier in this chapter.

Information required in order for this method to be effective include a knowledge of future real estate developments and plans for any changes in land or dwelling utilization. Trends in neighborhood characteristics and school attendance must also be studied. A form listing detailed information requirements for the use of this method may be found on page 30-32 of the Handbook of Statistical Procedures for Long-Range Projections of School Enrollment. For school districts not already familiar with this method, the use of a consultant is recommended.

Integrated State and Local School Enrollment Projections

This technique is most useful in making long-range (more than ten years) projections of school enrollment. Integrated state and local area school enrollment projections involve making state or area projections of enrollment and working down to the local level using the figures generated at the larger level. The advantage of the technique is that projections at the state or area level have a higher degree of reliability than projections made at the local level. Since secondary school enrollment is highly correlated with the population between ages five and seventeen, alternate projections for this age group can be made based upon differing assumptions about future birth rates and number of births. Once a particular enrollment projection has been made for the state or area, the school district's historical percentage of state or area enrollment is used to determine the school district's projected enrollment. As an example, school district X has historically enrolled about 2% of the state's 10th grade student enrollment. A projection for 1990 at the state level shows an expected 10th grade population of 100,000 students. Therefore, school district X can expect 2% of 100,000 students, or an enrollment of 2,000 students in the 10th grade.

Several different specific methodologies can be employed to determine both projected state enrollments and the historical percentage of enrollment to be used in this technique. In Michigan, for example, state population by age group is projected to 1990 by the Office of Management and Budget. Enrollment for each grade is projected through 1990 by both the Office of Management and Budget and the Michigan Education Association. The Michigan Education Association provides estimates of state secondary enrollment using the cohort-survival technique through 1986-87.

The integrated state and local enrollment projection technique should be used only for longer-range projections, and should be expected to yield only rough estimates of future student enrollment.

Determining Student Interest in Vocational Education

This section identifies and discusses factors which affect the interest in and selection of vocational education programs by students. Specific recommendations for establishing better information concerning student interest are provided. Also discussed are possible methodologies for establishing a system for projecting future student interest in vocational education programs based upon information which either already is available or could be gathered by vocational administrators. The approaches suggested are of two types: short-term determination of student interest by program and longer-term projection (more than one year) of student interest by program or career cluster. The mechanisms utilized to make these projections of student interest in vocational education programs are basically of two types: 1) manual operations and 2) computer information retrieval systems.

Short-term (one year) Determination of Student Interest By Program

Determination of student interest in vocational programs for the succeeding year is critical in planning for efficient use of staff, facilities and equipment. Knowledge of student interest trends, particularly valid and reliable information, is also useful in making adjustments in programs and in comparing the student interest (demand) with manpower demand information to discover any discrepancies between the two. Once the planner has indicators of student interest by program along with a longer-term projection of employment trends by occupation, a decision must be made concerning which factor (student interest or manpower demand) should determine program enrollments, or, if both are important, what the relationship should be.

Pre-Enrollment Programs

Perhaps the most reliable method for developing information on short-term student-interest by program is the creation of a pre-enrollment mechanism for vocational education programs. Although the pre-enrollment procedure is most efficient when operated within the context of a total pre-enrollment program, pre-enrollment for specific vocational education programs can yield the type of information required for year-to-year planning for vocational education. For the pre-enrollment program to be effective, the program must:

1) be well publicized
2) offer advantages to those who use it
3) provide opportunities for students to change initial program requests
4) be accessible to all students

The pre-enrollment program has the advantage of requiring the student to make a tentative commitment to a program for the coming year. This has the effect of encouraging the student to obtain guidance and career information, either through the school or parents and friends, at an earlier point in time than otherwise might be the case.

Pre-enrollment programs must be established taking into account the needs of students, teachers, and counselors and must also be coordinated with enrollment procedures for the total secondary school system at the local level. Because of this, no attempt will be made to suggest a model pre-enrollment program in this chapter. However, possible manual and computerized systems will be described in general terms.

A manual system is most efficient in a centralized situation such as a high school with an autonomous vocational education program. As the number of students to be served by a manual pre-enrollment system increases, the efficiency of the system decreases. However, from a planning point of view, the need for information on student interest increases. School districts with adequate computer facilities should investigate the possibility of establishing a computer-based pre-enrollment program.

Both manual and computerized pre-enrollment procedures consist of the following general steps.

1) pre-enrollment counseling and occupational information
2) decision by students concerning vocational program enrollment early in the academic year (before December) preceding actual enrollment.
3) listing of students pre-enrolling by program request.
4) spring final pre-enrollment period -- those students who wish to change earlier program request may do so at this time.

Information of value derived from the pre-enrollment program will depend on the quality of the program implemented, especially the career counseling, guidance and occupational information provided the student. Increasing the percentage of students who participate in the pre-enrollment process will also increase the utility of information. The information concerning student interest by program may be used in the following ways to be of value to the vocational education planner:

1) The number of students expressing interest in Program X for next year may be compared with the number of students being served in that program currently. This information will be helpful in determining whether the size of the program will need to be increased or decreased based on student interest.
2) The number of students expressing interest in Program X for next year may be compared with the number of students who expressed interest in that same program last year. This will provide an indication of whether student interest by program or cluster is increasing or decreasing.

WILLIAM AND MARY OCCUPATIONAL EDUCATION STUDY*

This survey is reprinted from Planning and Implementing Career Preparation Programs, Chicago; McKnight Publishing Company, 1974, by permission of the authors, Dr. Joseph Borgen and Dr. Dwight E. Davis.

STUDENT CAREER INFORMATION SURVEY

(Your answers are confidential--your teacher will not see them. Hand your paper to the student designated by the teacher to collect them.)

1. Name of High School: ____________________
2. Sex: 1) Male _____ 2) Female _____
3. Year in School 1) Sophomore _____ 2) Senior _____
4. How would you describe your present health?
   Excellent _____ Good _____ Average _____ Poor _____
5. Do you have any physical disabilities? Yes _____ No _____ If yes, please describe. (It is essential to know whether you are confined to a wheel chair, hard of hearing, partially blind, etc.)
   ____
   ____
   ____
6. Father's Occupation:
   What does he do? ____________________
   Where is he employed? ____________________
   (Name of Employer) (Address: City & County)
7. Mother employed? Yes _____ No _____
   If yes, what does she do? ____________________
   Where is she employed? ____________________
   (Name of Employer) (Address: City & County)
8. Parents' educational background: Check ONE of the following for each parent.

Mother	Father	
_____	_____	(1) Not a high school graduate
_____	_____	(2) Graduated from high school
_____	_____	(3) Business school or trade school
_____	_____	(4) Some college education
_____	_____	(5) Graduated from college
_____	_____	(6) Do not know how much education

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*Adapted from surveys by Illinois Valley Community College, Black Hawk College, Morton College, Illinois Eastern Junior College, Parkland College, William Rainey Harper College, and others.

9. Number of children in the family at home __________

10. Which high school course program or curriculum best describes the one in which you are enrolled?
    _____ 1. Commercial or business
    _____ 2. College preparatory
    _____ 3. Shop or industrial arts
    _____ 4. Agriculture
    _____ 5. General
    _____ 6. Home Economics
    _____ 7. Vocational
    _____ 8. Fine Arts
    _____ 9. Others: (Specify) ____

11. To the best of your knowlege, what is your average grade in all of your high school courses?
    _____ 1. A
    _____ 2. B
    _____ 3. C
    _____ 4. D
    _____ 5. Failing

12. What do you plan to do on a full-time basis during the first year after you complete high school? (Check all that apply)
    _____ 1. Work on a job full-time
    _____ 2. Get married
    _____ 3. Enter military service
    _____ 4. Work at home for parents
    _____ 5. Attend college or university
    _____ 6. Enroll in some type of educational training such as business college, trade school, technical school, or a nurses training school other than (Name of School).
    _____ 7. Attend college full-time and work part-time
    _____ 8. Work full-time and attend college part-time
    _____ 9. Attend (Name of School)
    _____10. Other (Please Specify) ____________________________________

13. How do you think your parents feel about whether you attend college after high school graduation?
    _____ 1. Insist or expect me to go
    _____ 2. Want me to go if I want to
    _____ 3. They do not care one way or the other
    _____ 4. Do not want me to go or will not allow me to go

14. If your future plans "do not" or "probably do not" include going to college, indicate the reasons of most importance.

_____ 1. Tired of studying
_____ 2. Want to get a job
_____ 3. Costs too much money
_____ 4. What I want to learn is not at college
_____ 5. Feel that I do not have the ability
_____ 6. Other: (Specify) ____________________

15. If your plans "probably" or "definitely" include attending college, which college is it most likely that you will attend immediately after high school?

_____ 1. (Name of local junior college)
_____ 2. State University
_____ 3. Other (Specify) ____________________
_____ 4. Check here if you are undecided

16. If you plan to go to college but do not expect to attend (Name of School), what are the most important reasons why you do not plan to attend (Name of School)?

_____ 1. Too expensive
_____ 2. Does not offer what I want, which is (Specify) ____________
_____ 3. Too much like high school
_____ 4. Instruction not as good as elsewhere
_____ 5. Inadequate and crowed conditions
_____ 6. Want a church college
_____ 7. Students who cannot succeed elsewhere go there
_____ 8. Other: (Specify) ____________________

17. What do you want to do for your life's work - vocation or occupation?

Please name: First choice ____________________
Second choice ____________________

18. Who do you believe has influenced greatly your occupational choice?

_____ Mother
_____ Father
_____ Grandparents
_____ Older Brothers & Sisters
_____ Teachers
_____ Counselors
_____ Fellow Students
_____ Others (what do they do?)
____

19. Which do you think is most important in a job? (Check ONE only)

_____ 1. Security
_____ 2. High pay
_____ 3. Nice working conditions
_____ 4. Prestige
_____ 5. Chance for Advancement
_____ 6. Being able to find a job
_____ 7. Liking your work
_____ 8. Other (list) ____________

20. Do you or have you participated in any type of work experience during the summer or after school hours?

_____ No _____ Yes If yes, answer or check the following:

_____ Regularly after school

_____ Full-time during the summer

_____ Occasionally

_____ How many hours a week? (Number of hours worked)

_____ Approximately how much do you earn a week? (before deductions)

_____ What work do you do? ____

21. To attend a school or career program of your interest:

A. Could you commute up to 25-40 miles?

_____ No _____ Yes _____ Don't know

B. Would you work part time and summers to earn your tuition and expenses?

_____ No _____ Yes _____ Don't know

22. After you finish high school, do you

_____ 1. prefer to remain in the Williams and Mary Counties area if you can find a job?

_____ 2. want to move to ____________________ area?

_____ 3. don't know - it depends on ____________________________(reason)

23. The men and women of this nation are employed in thousands of different careers. It will never be possible for (Name of School) to offer programs in all of these different occupations. It is possible, however, for several new career programs to be offered. The following list contains many types of jobs. You can help in the planning of future programs by identifying the types of jobs in which you would be interested for your career. Place a 1 by your first choice, 2 by your second choice, and 3 by your third choice. If the job you would choose is not listed, write in the job by number 132, 133, or 134

A. INDUSTRIAL JOBS

____ 1. Air cond., refrigeration, heating mechanic
____ 2. Air cond., refrigeration, heating technician
____ 3. Appliance repairman
____ 4. Assembly line worker
____ 5. Auto mechanic
____ 6. Automotive technician
____ 7. Aviation mechanic
____ 8. Boat builder
____ 9. Cabinetmaker
____ 10. Carpenter
____ 11. Chemical technician
____ 12. Chemical worker
____ 13. Civil and highway technician
____ 14. Core maker
____ 15. Cupulo tender
____ 16. Drafting and design technician
____ 17. Draftsman, architectural
____ 18. Draftsman, machine design
____ 19. Electrical technician (AC-DC)industrial
____ 20. Electrician (lineman)
____ 21. Electrician (wireman)
____ 22. Electronic technician
____ 23. Electronics repairman
____ 24. Explosives worker
____ 25. Foreman-first line supv.
____ 26. Foundry worker (unskilled)
____ 27. Heavy equipment operator
____ 28. Hydraulic and pneumatic technician
____ 29. Industrial Engineering technician
____ 30. Industrial Technician, prod. control

____ 31. Instrumentation technician
____ 32. Machine operator
____ 33. Machinist
____ 34. Meat cutter
____ 35. Mechanic, general
____ 36. Mech. tech. (machine design)
____ 37. Mech. tech. (production control)
____ 38. Metallurgical technician
____ 39. Millwright
____ 40. Miner
____ 41. Painter
____ 42. Patternmaker
____ 43. Plasterer
____ 44. Plastics worker
____ 45. Plumber
____ 46. Printer
____ 47. Railway worker
____ 48. Roofer
____ 49. Sheet metal worker
____ 50. Stationary operator
____ 51. Steelworker
____ 52. Time and motion study
____ 53. Truck driver
____ 54. Unskilled laborer
____ 55. Welder

B. BUSINESS JOBS

____ 56. Accountant
____ 57. Advertising and/or Commercial Art
____ 58. Bank clerk or teller
____ 59. Bookkeeper
____ 60. Business data processing-system analysis programmer
____ 61. Business machine operator
____ 62. Business management
____ 63. Clerk typist
____ 64. Court reporter
____ 65. Credit manager
____ 66. Data processing machine operator
____ 67. Dispatcher
____ 68. General office work
____ 69. Merchandising
____ 70. Office machine operator
____ 71. Outside salesman
____ 72. Real estate, insurance and/or finance
____ 73. Retail management and buying
____ 74. Sales manager
____ 75. Secretary
____ 76. Stenographer
____ 77. Traffic manager

C. SALES AND SERVICE JOBS

____ 78. Bartender
____ 79. Barber
____ 80. Beautician
____ 81. Bus driver
____ 82. Cashier (retail store)
____ 83. Cook or chef
____ 84. Fireman
____ 85. Florist
____ 86. Gardener
____ 87. Hospital attendant
____ 88. Janitor
____ 89. Laborer
____ 90. Laundry and dry cleaning worker
____ 91. Law enforcement officer
____ 92. Marine service officer
____ 93. Meter reader
____ 94. Nurse's aide
____ 95. Plant security guard
____ 96. Postal worker
____ 97. Route salesman
____ 98. Salesperson (retail)
____ 99. Seamstress
____ 100. Service station attendant
____ 101. Shoe repairman
____ 102. Stock boy
____ 103. Tailor
____ 104. Waiter or waitress
____ 105. Water treatment or sanitation worker

D. HEALTH, HOSPITAL AND MEDICAL JOBS

____ 106. Dental office assistant
____ 107. Dental hygienist
____ 108. Medical office assistant
____ 109. Medical lab technician
____ 110. Nurse (practical)
____ 111. Nurse (registered)
____ 112. Psychiatric technician
____ 113. X-ray technician

E. AGRICULTURAL JOBS

____114. Agricultural chemicals technician
____115. Agricultural mechanics
____116. Agricultural production
____117. Agriculture marketing
____118. Agronomy technology
____119. Farm management
____120. Greenhouse manager
____121. Livestock manager
____122. Natural resource conservationist
____123. Nursery worker
____124. Ornamental horticulture
____125. Plant food technologist
____126. Recreational res. mgmt.
____127. Retail farm supplies
____128. Seed inspector
____129. Seed technologist
____130. Soil technologist
____131. Soils & Fert. lab technician

F. OTHER (WRITE IN BELOW)

132. ____

133. ____

134. ____

YOUR COOPERATION IS GREATLY APPRECIATED!!!

3) Using a ratio of the number of students expressing interest in Program X this year divided by the number of students expressing interest last year, this number can be multiplied by current enrollment in Program X to yield a new projected enrollment figure for the upcoming year. (See Tab II of the Policy Information System)

The information developed over time through use of the pre-enrollment procedure would be of significant assistance to the vocational education planner, especially for short-term student interest projections.

Student Interest Surveys

Locally designed surveys to collect information on student aspirations and vocational needs have been used by many school districts. The surveys are generally designed to collect information concerning not only current student interest in vocational programs currently offered but also to determine whether sufficient interest is present to justify offering new programs. In addition, some surveys are structured in order to develop information about factors which influence the occupational choice and program selection of students. These surveys provide information of use to counselors as well as administrators. An excellent example of a student-interest survey which could be administered by a local school district is provided on the following pages. While these types of surveys will yield information concerning student interests and aspirations, the problem is how to accurately interpret this information. Students expressing interest in a particular occupation or program do so for a variety of reasons (occupational status, parental or peer influence, etc.). The fact that no commitment on the part of the student to enroll in any program in which interest is expressed makes determination of actual student interest difficult. Student interest surveys are useful as rough indicators of student aspiration and interest, but do not provide the kind of information which can be translated into program enrollments the following year, as the pre-enrollment program does.

Perhaps the primary value of the student-interest survey is to obtain information relating to the number of students who would consider enrolling in a new vocational program if it were to be offered the following year or two years in the future. Student-interest surveys, particularly when used as a supplement to a pre-enrollment program can also provide needed information concerning factors which influence program selection.

Interest Inventories

Several standardized student-interest inventories have been developed nationally for use in assessing student interest and/or aptitude for vocational education programs. Among these inventories are the Kuder Occupational Interest Survey (1962), the Kuder Preference Record-Occupational (1957), the Strong Vocational Interest Blank (1943), and the Ohio Vocational Interest Survey (1970).

These interest inventories measure the degree of interest in loosely defined occupational areas. The tests are intended to provide assistance to students in career decision-making. They are not likely to provide information of direct value to vocational education planners because they do not categorize student preferences by occupation or vocational education program. A brief description of each of the existing vocational interest inventories is found in the Seventh Mental Measurements Yearbook, Volume II. The resulting information is no more related to potential satisfactory occupations than to the actual program choice the student will make. Because of the indirect nature of questioning, the information may be helpful to the student but will not assist the program planner.

Long-term (more than one year) Projection of Student Interest

Projections of student interest in vocational programs for periods of time longer than one year are extremely difficult to make with any degree of accuracy. Rapidly changing technology and societal conditions, such as the level of unemployment and the level of funding for vocational programs, have an impact upon student selection of vocational education programs which is largely unmeasured. In a society which values educational freedom of choice, discourages tracking of students into certain programs, and allows students to change their minds, any attempt to predict student interest accurately on a long-term basis is suspect.

Perhaps the best approach is to examine past enrollment or indices of student interest in existing programs. Where enrollments have not been limited in the past, enrollments may be considered a reliable measure of student interest. Using a linear regression technique, projections of enrollment or student interest can then be made on a long-range basis for current programs. This method assumes that any trends in past enrollment will be carried into the future. This method is therefore useful only for existing programs for which a three to five year history of enrollment is available.

Because no reliable methodology for projecting student interest on a long-term basis has yet been developed, administrators and planners should consider long-range labor market projections and projections of secondary enrollments when considering future program options.

Summary

Projecting enrollment at the secondary level is essential to effective vocational education planning and can be performed with some degree of accuracy. Enrollment projections may be used as a base for determining the number of students expected to be interested in vocational education programs.

A satisfactory method for predicting student interest in specific vocational education programs has not yet been developed. The most effective method to date is the pre-enrollment program combined with local student interest surveys. On a long-range basis, knowledge of past trends in enrollment in specific programs may be used as a rough guide. On a long-range basis, manpower demand is a more realistic basis on which to initiate planning for new programs. Reliance on manpower demand for this type of long-range projection does not negate the importance of student interest in vocational education programs but does recognize the difficulty in making accurate, long-range student-interest projections.

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IV

TRANSLATING MANPOWER NEEDS AND STUDENT INTEREST INTO CURRICULA

INTRODUCTION

The initial three steps of the planning process as described in the first chapter involve (1) stating goals, (2) collecting needed information, and (3) developing the plan. Formulating the proposed vocational program and curriculum based on goals and information collected is in essence the process of developing the plan. Chapter IV investigates how to translate information gathered in the areas of manpower demand and student interest into curricula to meet stated goals and objectives. It also deals with the development of major factors that go into a vocational education system.

The structure of this chapter is to move from general to more specific considerations. The first part explores the issue of determining the best overall size and structure of the vocational system. That is, what programs should be offered and how many students or clients should a vocational system attempt to serve in each program? Within that topic, the section focuses on integrating manpower demand and student interest covered in chapters two and three. The cluster concept, an alternative way of structuring vocational systems is also the subject of attention in the first section. The second part of Chapter IV will discuss the internal development of each program relative to curriculum, *instructional methods, facilities, and equipment; topics that are covered in more depth in the following chapters.*

Combining Student Interest And Manpower Projections

A major goal of vocational education is translating skills taught to students into a primary work role. Thus, the ability of graduates to implement acquired skills by finding a job is a key factor in demonstrating the success of a vocational program. Manpower considerations, therefore, should weigh heavily in the determination of the overall size and structure of the vocational system. It would seem cruel and wasteful to train people for occupations within which there will be no job openings.

At the same time, many will argue that in a free society it is wrong to keep students out of programs they are interested in because manpower analysis indicates a shortage of jobs. This might be true for at least three other reasons:

1. Labor market projections may be wrong, as they often have been in the past;
2. Even though there may be a shortage of jobs in the future, the student in question may excel so greatly that he or she will be one of the few to get a job; and/or
3. Some students' interests and competencies may fit a particular vocation so well that it would be wasteful to attempt to force them into an occupation for which they are not nearly so well suited.

To include the factors of student interest and manpower demand into curriculum development, a process needs to be created where programs are designated according to their primary purpose. For instance, the function of a program such as keypunching will almost exclusively be preparation for employment since it is doubtful that anyone would undertake keypunching as a hobby or spare-time activity. A program in keypunching therefore has job demand as its primary interest and job or task analysis as its primary development component.

Some programs, however, such as graphics may not have job placement as a primary purpose for existence since very few graduates of graphic programs are able to find entry-level positions in the field. Yet graphics courses are often popular among students as training useful to other occupations or as a hobby and interest that can make time off the job more fulfilling and satisfying. In this case, student interest is more justifiable as a base for program development in terms of course content and teaching methods.

Where both student interest and manpower demand are major considerations, flexibility needs to be provided to answer both concerns. Students might be queried in order to determine whether participants desire a particular program for job placement or for the learning experience itself. Teaching modules could then be designed around each goal to provide for the needs for both types of students. In an auto maintenance program, for example, where students could enroll either for reasons of job placement or the learning experience, two different types of modules could be created. More expensive and complicated equipment or facilities could be used in sections for those seeking employment, while others could learn use of the basic tools and equipment that would be used by a person merely desiring to learn how to maintain his or her own auto.

Clearly, the overall size and program structure of the local vocational education system should reflect a balance between student interest, employment prospects, and other considerations. When manpower and student interest projection calculations are not made and when the balance between them is handled too casually by the vocational administrator and others, the outcome seldom reflects the goals of the system.

Two relatively simple methods for mathematically balancing student interest and manpower demand exist to aid the vocational education planner. They are:

1. the minimum placement ratio method; and
2. importance rating system.

Both of these methods are explained through a series of steps in the Policy Information System manual.

Projecting the desired future enrollment of vocational programs, as traditionally defined, is one important component in determining the size and structure of the vocational system. Determining the manner in which programs are broken down and how program units interrelate is another. One type of structure discussed in the following section is called the career cluster concept.

The Career Cluster Concept

Manpower training as it traditionally has existed under the auspices of apprenticeship and vocational education concentrates on developing a narrow set of work skill achievements. These work skills are generally arrived at by a job analysis which produces a task listing of required performances by the worker. The curricula with its emphasis on specific job tasks, often neglects a broader range of skills needed by students in learning how to learn and relating that education to living.

Because of the growing complexity of society and its needs, an increasing number of observers are disturbed with the inefficiency and ineffectiveness of traditional educational methods. Attention is being given to designing new vocational systems which are viewed as more functional to both the individual and society. The career cluster concept is one such new system.

"Clustering" in educational program development has many diverse forms. The cluster idea is generated around the goal of preparing persons for employment in a number of different, yet related occupations. Occupational clusters are generally similar with respect to basic skills, human requirements, industries using such preparation and cross-occupational mobility opportunities. The central thrust is directed toward enabling persons to enter into several different occupations as opposed to the traditional emphasis on single in-depth occupational preparation.

Society is geared to change and in a basic sense committed to change. Industry needs workers who are flexible, workers who have a field of skills and basic education that will enable them to adapt rapidly to occupational changes. At the same time, the worker with narrow work skills is obviously disadvantaged during periods of high unemployment in his area of training or when technological change makes a particular skill obsolete. Seemingly, a wise step for curriculum planners to take is to study industrial and commercial operations and plan in terms of cluster competencies.

Occupational clusters are groups of occupations which have enough in common that learned knowledge and skills have a notable degree of transfer from one to the other. Not all knowledge and skills needed for specific jobs in a cluster are directly related. An example of the concept is provided by the relationships between those skills required by a carpenter and those by an electrician. The carpenter need not understand the electrical theory required by the electrician. Both, however, need to know the basics of home construction, a number of tools used are common to both, the manual dexterity is similar, and working conditions have much in common.

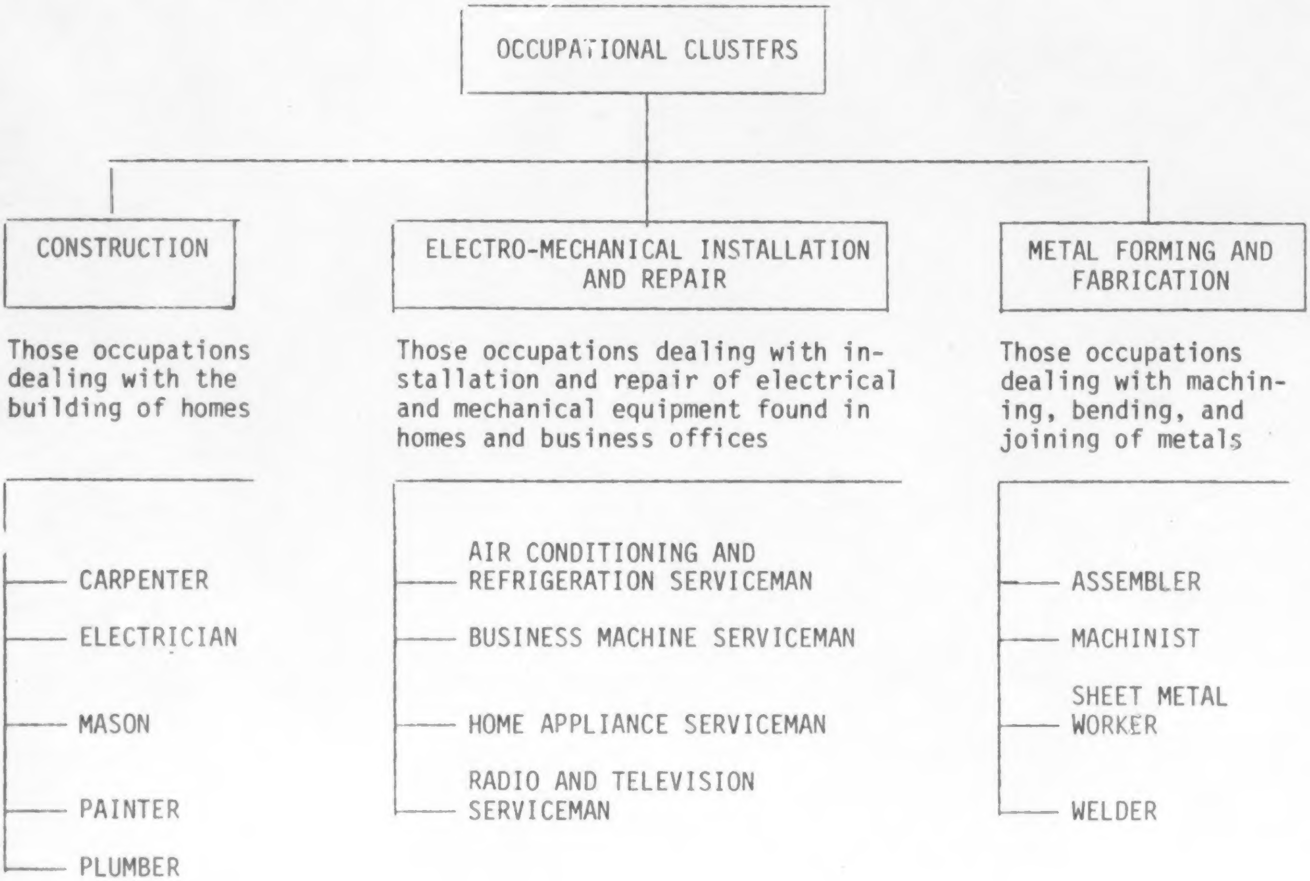
Occupational clusters may be very broad as noted in the United States Office of Education Plan, which classifies the world of work into fifteen clusters, or they can be subdivided into narrower groupings for particular purposes. An example of occupational clustering is illustrated in Figure 1.

Developing Cluster Programs

The best place for the vocational planner and administrator to start in organizing curriculum into clusters is to look at specific vocational clusters to determine required components and to review some of the problems that are likely to occur.

The vocational program entitled Nurse Aide, for example, is more than a curriculum to train an individual for a single identifiable job entry. It really involves the training for a number of para-medical

FIGURE 1



- OCCUPATIONAL CLUSTERS
  - CONSTRUCTION

    Those occupations dealing with the building of homes
    - CARPENTER
    - ELECTRICIAN
    - MASON
    - PAINTER
    - PLUMBER
  - ELECTRO-MECHANICAL INSTALLATION AND REPAIR

    Those occupations dealing with installation and repair of electrical and mechanical equipment found in homes and business offices
    - AIR CONDITIONING AND REFRIGERATION SERVICEMAN
    - BUSINESS MACHINE SERVICEMAN
    - HOME APPLIANCE SERVICEMAN
    - RADIO AND TELEVISION SERVICEMAN
  - METAL FORMING AND FABRICATION

    Those occupations dealing with machining, bending, and joining of metals
    - ASSEMBLER
    - MACHINIST
    - SHEET METAL WORKER
    - WELDER

jobs in the "Health Cluster" of occupations. The task for the administrator and planner becomes one of adequately:

1. identifying and describing the jobs within the cluster;
2. identifying skills and attributes required of the worker;
3. providing the necessary level of training; and
4. communicating to youth an understanding of what the Health Cluster is prepared to deliver.

Looming foremost among the several obstacles standing in the way of developing a clustered occupational program is the natural tendency for teachers and administrators to do only that which they currently know how to do well. Staffing clustered programs is difficult. When the cluster includes job training which cuts across several specialties and a particular specialty does not warrant full time staffing nor do employment opportunities justify significant student enrollment, there is little incentive to develop that part of the cluster. This seems to be true regardless of solid evidence of student interest or need by industry for trained persons in the occupation.

An example of this situation might be in the area of Refrigeration. It may be unreasonable to expect thirty or forty students each year to be interested in the area and equally unreasonable to have jobs available for half that number on an annual basis. There is, however, ample evidence that trained refrigeration mechanics are needed in the industry. The question involved is determining the number needed. This figure probably would not be sufficient to warrant a separate full time program.

Clustering several occupational areas, with small but very important placement needs, into one program is a logical solution. The cluster in this instance may appear as a combination of:

1. Air Conditioning;
2. Heating;
3. Refrigeration; and
4. Ventilation.

The resulting cluster may warrant one or perhaps two instructors to remain cost effective, and the problem then becomes one of finding qualified instructors who are willing to learn and teach aspects of the cluster with which they are unfamiliar.

Although obstacles are substantial, they should not discourage the continued implementation of occupational clustering. Planners and administrators should expect it to exist and be implemented somewhat irregularily. In some instances, teachers can and will assume leadership in evolving this curriculum organization for their particular program area while in other cases the administration will need to assume the initiative.

Linking Modules To The Cluster Concept

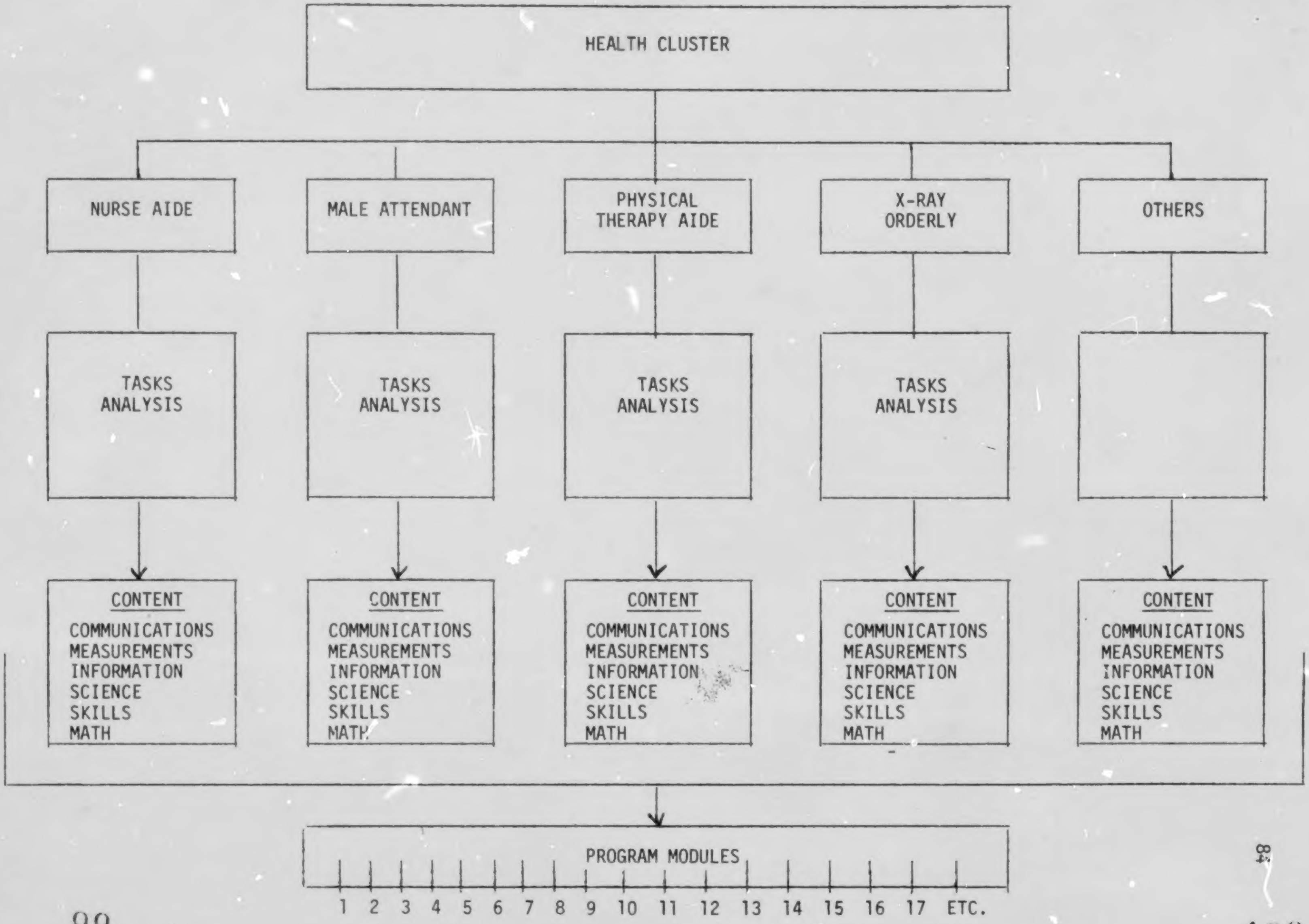
A module for vocational technical skills training should be looked upon as a free-standing unit based upon a job task or job title. For example within an automotive repair program the automotive lubrication module would entail having the student perform a series of tasks geared to entry-level employment in an automotive service garage doing automotive lubrications. Granted that the student should also take training in additional modules such as engine tune-ups and tire service to increase employability, nevertheless the student should elect those modules which will fit individual goals and take into consideration the time available to devote to vocational training. Modules which are based on job titles ensure that the student has gained some identifiable skills regardless of whether six weeks, a semester, or two years have been spent in a training program cluster.

To relate curriculum clusters to modules the first step is to identify major clusters which have common skill requirements and characteristics such as Health, Office and Business, Communications and Media, and Construction. These broad clusters can be further sub-divided into more specific occupational identities. A Health Cluster, for instance could be comprised of training for the more specific occupations of Nurse Aide, Male Attendant, Physical Therapy Aide, Dietary Aide and others. The next step is to effect the modules for the Health Cluster as graphically shown in Figure 2.

Figure 2 attempts to illustrate a number of factors about the Health Cluster including:

1. There are specific occupations in the Health Industry appropriate for high school youth;
2. Successful job entry is based on the student being able to perform the tasks which make up the job performance -- consequently, the tasks must be explicitly identified;
3. Once tasks are identified, the subject content or what one must know to perform the tasks becomes more apparent;

FIGURE 2


HEALTH CLUSTER
NURSE AIDE
MALE ATTENDANT
PHYSICAL THERAPY AIDE
X-RAY ORDERLY
OTHERS
TASKS ANALYSIS
TASKS ANALYSIS
TASKS ANALYSIS
TASKS ANALYSIS
CONTENT
COMMUNICATIONS
MEASUREMENTS
INFORMATION
SCIENCE
SKILLS
MATH
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MEASUREMENTS
INFORMATION
SCIENCE
SKILLS
MATH
CONTENT
COMMUNICATIONS
MEASUREMENTS
INFORMATION
SCIENCE
SKILLS
MATH
PROGRAM MODULES
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 ETC.

4. Particular modules to instruct the student toward job competencies in one specific occupation may be directly related to one or more occupations, while in other instances, modules may be specific to a single occupation.
5. Modules developed and based upon job titles, task analysis, and related subject knowledge content offer both a procedure for improving the relevance of curriculum as well as an improved learning delivery system.

Implications Of The Cluster

In spite of this era of increasing job specialization, the cluster concept has many favorable qualities that make it an attractive alternative for the vocational planner as well as helping to prepare students to break into a competitive job market.

First, with changing technology workers must be adaptable to and familiar with change. Accelerating technology and related economics has significant implications for the kind of vocational preparation required for youth to enter the labor force. There are dangers in predicting a favorable future for almost any narrow occupational category and there will be economic advantages for the individual who acquires fundamental training that will enable him to move back and forth over several occupational categories.

In addition, when students leave school, the first and often biggest hurdle is job entry itself. Cluster training provides the student with a variety of skills and a versatility that can not be obtained in the traditional one-skill program. Clustering also prepares the individual for vertical and horizontal job mobility.

Another attribute of the cluster concept is that it capitalizes on the old problem of when it is best for the student to make a firm career choice. The cluster makes it possible for the student to select a broader multiple occupational pursuit that allows the individual to enter the world of work at a number of points as interests begin to solidify and knowledge of "self" and careers becomes more definite.

A very important component of a rationale for the cluster relates to the school system itself in regard to its ability to provide a diversity of occupational offerings. This needs to be examined both from the standpoint of numbers of students and their interests as well as the physical facilities that need to be provided and effectively used. Related to this is the fact that in many instances the small job market being served presents a problem which can be partially overcome by using the occupational training cluster as opposed to unit occupational training structures. The need for diversity in training remains critical even though numbers required may be low in given geographical areas.

It would also seem logical that on-the-job training potential is greater under clustering programs. Placement into an organization where there are a number of different occupational experience opportunities that center around the characteristics and commonalities of a cluster is generally easier to obtain that highly specific occupational placements. Preparation for the world of work in terms of self-exploration through sampling a range of jobs, gives the student a better opportunity to assess interests, capabilities, and aspirations. The net outcome of self and occupational exploration is to enable the student to determine the kind of endeavors that will be compatible with each individual's own physical, intellectual and emotional make-up.

Figure 3 looks at the Business and Office cluster and illustrates common characteristics and skills contained in these related, yet different occupations. The diagram also gives an example of the specific vocational-technical skills required of the accounting occupation within the Business and Office cluster. An awareness of what characteristics and skills pertain to a particular course or program provides a foundation for the design and development of curriculum, the topic covered in the next section of this chapter.

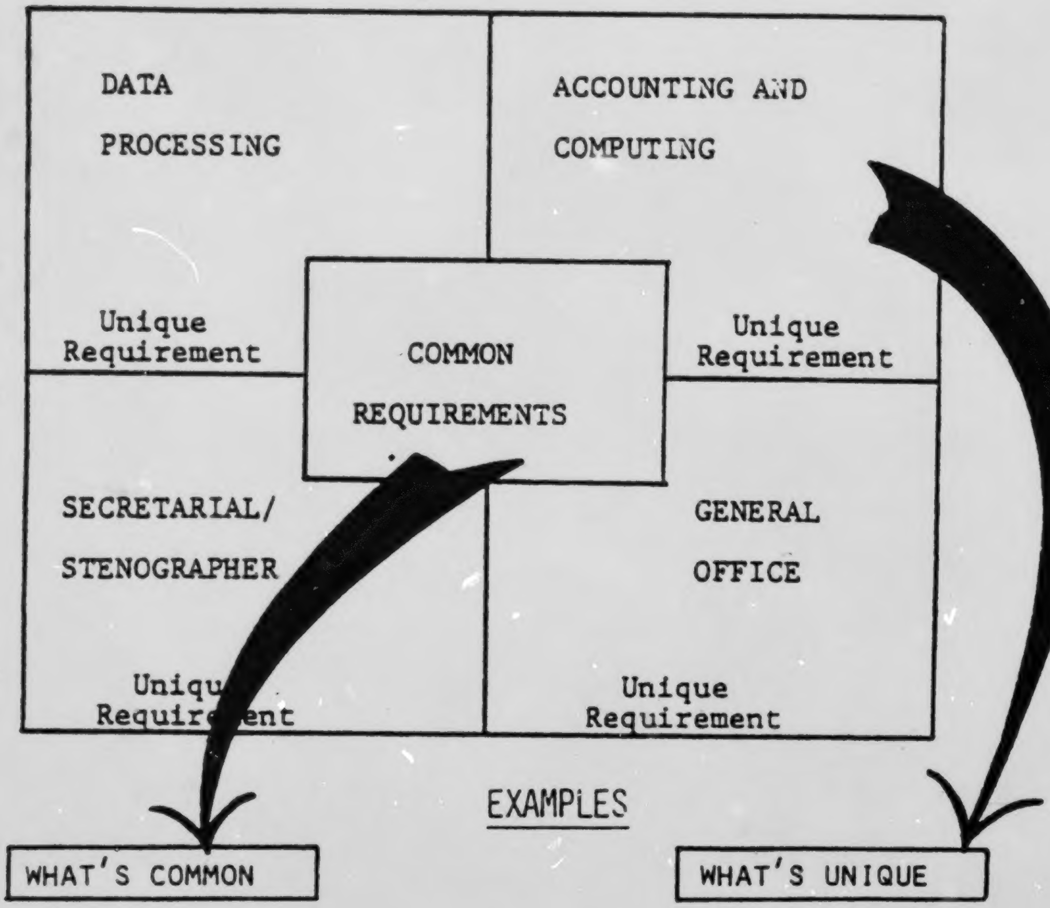
Designing Instructional Programs

Designing an instructional program for a vocational education curriculum is a matter of asking and answering a series of questions concerning the characteristics and components of the program. Written responses to each of the questions presented in this section, future enrollment projections discussed in Chapter III, and costing and budgeting techniques presented in Chapter VII combine to produce a good foundation for a program plan.

Probably the most important set of questions involves asking what are the characteristics of the target groups to be served by the vocational curriculum. Within this basic question are more specific queries concerning physical characteristics, past education and employment experience, motivation, interest, and attitudes of the group of students expected to enroll in a vocational curriculum. Physical characteristics

FIGURE 3

BUSINESS AND OFFICE


DATA PROCESSING
Unique Requirement
ACCOUNTING AND COMPUTING
Unique Requirement
COMMON REQUIREMENTS
SECRETARIAL/ STENOGRAPHER
Unique Requirement
GENERAL OFFICE
Unique Requirement
EXAMPLES
WHAT'S COMMON
WHAT'S UNIQUE

CAREER DEVELOPMENT
1. Self Awareness -- Interpersonal Skills
2. Career Awareness -- Closely Related Work Areas
3. Decision-Making and Planning Skills
4. Placement Skills -- Job Acquisition, Job Openings, and Continuing Education

WORK ORGANIZATION SKILLS

WORK ATTITUDES AND VALUES

VOC/TECH RELATED ACADEMIC SKILLS

SELECTED VOC/TECH SKILLS
1. Adding Machine Operation
2. Calculator Operation
3. Copy Machine
4. Typewriter

SELECTED VOC/TECH SKILLS
1. Preparing a Balance Sheet
2. Preparing a Cash Proof
3. Compute and Record Accrued Expenses.

of the group including age, sex, the presence of physical disabilities and other factors will have important implications on instructional methodology and program design. Past education and employment records of each person in the target group allows the teacher and program planner to determine capabilities of the class which in turn will influence course content, instructional methodology, and the setting of performance standards.

Motivation is a significant group and individual variable, one that is difficult to ascertain. Data on career goals, interest, aptitude, and past employability or educational success can all be helpful in giving an indication of motivation. This factor will have implications on instructional methodology and the setting of performance standards. Knowledge of interest in terms of career objectives of the members of the target group along with sports and recreational interests would also be useful in designing programs.

Vocational planners and instructors should also develop an awareness of attitudes, biases, and prejudices of the target group based on ethnic and cultural background, attitudes toward work, authority figures, education, and government to recognize possible implications these factors would have on instructional design and the delivery of curriculum.

Each of these elements involved in the characteristics and compenentencies of the target group can be summarized in a systematic fashion for use in developing programs. Results from standardized tests pertaining to vocational education such as the Strong and Vocational Interest Survey tests can provide information on interests, aptitudes, and attitudes.

A second basic issue to pose in the process of designing instructional programs is a review of the specific competencies the graduate of a given program or course will be expected to possess to obtain a job in the vocational area. To undertake this task vocational administrators, planners and instructors should obtain and review course or program outlines, objectives, and competency lists prepared by other institutions offering training programs in the job area under consideration. It is also useful to obtain sample job descriptions prepared by organizations employing persons in the occupation under consideration as well as interviewing persons presently employed or supervising others in that job category. In the case of skilled trades and other vocational programs, accreditation standards, competency studies and other publications concerning the occupation are useful sources of information that will help to orient program design toward actual job requirements.

A review of these sources should focus on consideration of some of the following issues.

1. What a person must know to be successful on the job.
2. What tools or major equipment the employee must be able to operate.
3. What attitudinal characteristics are essential in performing competencies.
4. Are each of the various competencies necessary for job entry?

Once the realm and nature of competencies required for a vocational program leading to a job are evaluated, the next step is to determine the appropriate objectives for a given course or program. Student performance objectives will be based on the identification and analysis of the various job competencies required. The most useful form for student performance objectives is a statement which describes the performance a student should exhibit upon completion of a course or program. An example would be:

> Upon completion of this course, the student will be able to reline brakes on any automobile so that the brakes are in accordance with manufacturer's specifications and meet flat-rate standards for the car.

When student performance objectives are defined and established, they can be arranged and utilized to develop instructional packages including programs, courses and units of instruction. While grouping performance objectives attention should focus on the following considerations:

1. The facilities and/or equipment required to foster learning experiences related to the objective
2. The amount and nature of background information needed for the student to achieve the objective
3. The type of instructional methodology that would best serve in preparing the student to meet the objective. Examples would include lecture, discussion, audiotutorial, laboratory practice, on-the-job work experience.
4. The type of instructional format best suited for the particular institution

Each of the basic components of the vocational education program including facilities, equipment, staff, and instructional methodology should be analyzed in terms of student performance objectives.

The vocational administrator and planner should ask the question of what instructional staff and staff competencies will be needed to offer a given course or program. Ideally, the administrator would want to recruit staff who have a good balance between actual work experience in the field, academic training and other characteristics and attitudes such as the ability to relate to students. An organized technique for evaluating needs is to compile a "staff qualifications worksheet" which looks at potential instructors in terms of position title, work experience, professional education, teaching experience, and other special requirements such as licensing, certification, and personality characteristics. The subject of planning for vocational instructional needs is covered in more depth in Chapter VI.

In planning for facilities, administrators must consider the expected number of students to be served, the total number per class session, the types of courses and programs to be offered, and the instructional methodology which will be used such as classroom, laboratories, audio-visual, or on-the-job work experience. Other important facility components are ancillary services needed to support a given course or program. Examples of such services would be vocational guidance counselors, financial aids, placement directors, health services, secretarial, clerical and maintenance personnel. The entire facility question is reviewed in more detail in Chapter V.

In designing the vocational curriculum for a particular course or cluster it is important to keep in mind considerations and evaluations of the role of manpower demand and student interest mentioned earlier in this chapter. Whether a vocational offering is predicated more on manpower demand or student interest will have implications for instructional methodology, facilities, and equipment utilized.

Finally every program design should include a plan for course, program, and cluster evaluation so that feedback on curriculum, student interest, and manpower demand can be woven into the process and bring about new courses or modifications in curriculum.

Placement And Follow-up Surveys

An important source of information for helping to answer some of the basic questions posed during the curriculum development process is the use of follow-up data. Follow-up data is often an effective measure of how relevant instructional methodology, program format, equipment and facilities were in relation to the job students trained for. Ultimately follow-up is one bottom-line measure of how well the vocational institution has prepared the student with the right skills, attitudes, and motivation for successful entry into the labor force.

Every vocational program ought to have a follow-up system if it is to engage in real planning because such information can be used at so many different stages in the planning process. As mentioned in Chapter II, follow-up data is one of the best measures of local manpower demand as it pertains to vocational education programs. Included in follow-up studies should also be questions which relate to the nature of the program and how effective graduates and program-leavers believe vocational training was in preparing the individual for employment. A sample question for students who obtain employment in the occupation for which they are trained might be:

> Were the skills which you learned relevant to the job you are now performing?

The initial question ought to evoke a clear "yes" or "no" response. This is important so that an objective analysis can be done. Such an objective analysis can accomplish two things.

1. Compare the percent of "yes" responses across programs. The comparison will help to point to those programs of greatest concern relative to the match between curriculum and skills required.

2. Pre-determine a cut-off point for "yes" responses. If a program receives 80 percent, for example, do no further analysis of that program this year but delve more deeply into other programs where more development appears necessary.

Beyond the first few "yes" and "no" type questions, inquiries need to be more subjective such as:

What skills are required of your current job which you did not, but felt you should have learned in your vocational program?

Was the training environment appropriate for learning the skills needed on the job?

Should there have been more: a) lecture; b) hands-on experience; or c) on-site training?

In this fashion, many of the questions posed in the previous section pertaining to program format, instructional methodology, course content and other components can be covered through follow-up analysis.

Program Advisory Committee

Another source of information and background for answering the questions posed during curriculum development is the program advisory committee. It is common for a vocational education system to have an overall advisory committee and a separate advisory committee for each occupational area. These committees are made up of lay individuals in labor, industry, business and the community-at-large and exist in order to provide a reality base for the program. Although these committees have been around for a long time and represent diverse interests and viewpoints, they are seldom utilized to fullest potential. A program of long-range planning assists the administration in obtaining greater utilization of the advisory committees.

In order to utilize the advisory committee effectively, the vocational education administrator needs to be prepared with a number of key questions. Advisory committees because of their ties with the business and industrial community can be of significant help in projecting manpower demand by occupation and also can assist in every other part of the program.

Summary

After stating the goals of the vocational education system and collecting information, the vocational educational administrator is ready to develop the annual and long-range plan for a vocational curriculum in two stages. The first stage is to determine the overall size and structure of the system including what programs should be offered and how many clients should be served by each. The second stage is to design each program. The instructional methodology, instructional personnel, facilities, and equipment should be determined by answering a series of basic questions to describe how the student gets from his current level of skill competence to that needed on the job. Other sources of information for answering these questions are follow-up surveys and advisory committees.

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V

TRAINING SITES FOR VOCATIONAL EDUCATION

INTRODUCTION

Once having determined the nature of the program needed to serve the interest and needs of students, the community and the economy, several alternatives exist for the envelope used to house the learning process. The best manner for considering the alternatives is to focus on the training station as a facility unit rather than thinking in terms of rooms and buildings. Training stations can then be structured to best fit the needs of the learning process.

This chapter will first of all define a vocational training station and look at the history of its development as a concept. Secondly, it will identify types of training stations. Thirdly, it will look at training station components in detail. Fourthly, the chapter will use the concept and describe how one translates program requirement into training station needs. The final steps described are how to survey the community for existing training stations and then supply needed stations both on-site and off-site.

Uses, Types and Locations of Training Sites

Among the many factors administrators must consider in planning for vocational education -- including program, student interest, manpower need, financial support, and personnel -- is the question of where training will occur. Vocational programs have been housed in a wide variety of places since they were established in the late 1800's. They have been placed in school buildings, houses, garages, factories, retail stores, and mobile units, to name a few. Generally, the training sites fit into one of two classifications. Courses are either "on-site," which means in the real or actual environment where the occupational activity is found, as in a service station, retail store, hospital, or tool and die shop, or; they are "off-site," in a simulated rather than actual environment, as in a school building or mobile training unit.

School type, or "off-site" training stations are provided in several ways. Sometimes school buildings are constructed or existing school space is modified to accommodate the program. Sometimes vacant commercial or industrial buildings are leased by a school system, or classroom and training space is provided within an industrial plant. A review of how several school districts have gone about providing sites for vocational education should be helpful in identifying future sites for vocational programs.

The history of how three school districts in Michigan -- Battle Creek, Flint and Grand Rapids -- provided vocational facilities was the subject of research aimed at obtaining this planning perspective. Secondly, this chapter contains a list of criteria and a suggested questionnaire which can be used by the planner to assist in finding the most suitable space for vocational training at the lowest possible cost.

Historical information from sites in the three Michigan school districts was gathered through interviews with those who were employed or who are now employed as vocational administrators and by reviewing several unpublished documents from these districts which describe present and past vocational education training sites.

Battle Creek

At the turn of the century, manual training, as it was called, was introduced into the Battle Creek school system by providing woodworking, drawing, sewing, and cooking courses. These manual training classes, offered initially in only 5th through 8th grades, were housed in the "Old Knitting Mill." The "mill" continued in use for twenty-one years, from 1902-1923, when it was replaced by a new vocational school building. During the growth years, manual training programs were also housed in other school buildings. In 1908, cooking and sewing courses were offered at the high school. Commercial courses including bookkeeping, penmanship, typing, and Pernin shorthand were added to the high school curriculum three years later. Dressmaking, millinery, and mechanical drawing followed in 1913. Manual training was eventually introduced in several elementary schools when in 1916 mechanical drawing, printing, cooking, sewing, and woodworking became a part of their curricula. Battle Creek introduced manual training as a night-school program in 1911.

Another vocational type program, called the Continuation School, was begun in 1920. Auto mechanics was a keystone in its curriculum. It is not clear whether this program was housed in the high school, the old mill, or some other building. With the passage of the Smith-Hughes legislation by Congress in 1917, Battle Creek prepared plans for a new vocational high school. Bonds were sold to provide construction money, and the new school opened for 1,124 students on January 30, 1923.

This facility and the high school building were located adjacent to one another on a shared site. Students enrolled in academic and trade related programs at the high school and in skill training programs at the vocational school. The vocational school offered auto mechanics, electricity (which was basic house wiring), woodworking (cabinet making), drafting, bookkeeping, cooking, sewing, typing, printing, and brick laying. It is interesting to note that course offerings appear unrelated to existing Battle Creek area industries during the period when major employers of skilled workers included Eaton Metals, Grand Trunk Railroad shops, Union Steam Pump, Advance Rumley (farm equipment), Post Cereal, and W. K. Kellogg Company.

Machine shop training and metal-working courses were offered for the first time in 1941 as part of the war training program and between 1941 and 1945, the vocational school was in session 24 hours per day. High school programs were conducted during the day and adults were trained for war industries during the early evening and night hours. Ninety military men, from nearby Fort Custer, were also trained every three months for three successive years in vehicle maintenance and repair.

During the war years, the Battle Creek Vocational School also introduced what was called "vestibule training." Bob Hale, the district vocational director, worked with local industries to identify specific manufacturing and production problems and to train workers to increase production and reduce scrap. For example, Eaton Manufacturing Company had contracted to apply a special coating to military engine valves. Some workers were very skillful and successful in applying the coating but most were producing more than 30% scrap. Mr. Hale asked the company to equip a shop area (a vestibule) within the vocational school as the training site and to name their most skilled employee to serve as the teacher. Scrap was reduced from 30% to 5% after the training experience. Their success soon led to "vestibule training" for industrial inspectors and other production employees.

Battle Creek schools became active in apprentice training when hundreds of G.I.'s were discharged from military service. These men were anxious to claim their G.I. educational benefit and to obtain skilled training and the schools were soon obliged to provide trade related courses for electricians, plumbers, pipefitters, masons, carpenters, tool makers, millwrights, sheet metal mechanics, auto mechanics, and auto body repairmen.

In 1951 a program for training practical nurses was introduced at Southwestern Junior High School for post high school age students. This program and other health occupations programs grew rapidly and were moved to Kellogg Community College in 1966.

A cooperative training program or "teacher coordinating program," as it was called, was established in 1954. In this program, coordinating teachers identified businesses and industries willing to employ 11th and 12th year students for four hours each school day to provide job training opportunities in retailing, office work, auto repair, printing, and drafting.

The Vocational Education Act of 1963 encouraged school districts to determine whether skill training needs were being met. After considerable study and planning by educators and officials in the Battle Creek area, the Calhoun Area Vocational Center was built. Opening in May 1970, it now serves more than 1,200 students from 13 school districts. All high school students are eligible to enroll, including those from private and parochial schools. The center is owned by the Calhoun Intermediate School District and is operated, by contractual arrangement, by the Battle Creek Public Schools. Since the center is located on a site adjacent to Kellogg Community College, there is great potential for sharing facilities and staff and for articulating vocational-technical programs. Currently, however, there is no interrelationship or exchange of students, staff, or program between the school and the college.

Initially, the center training program was quite traditional, including printing, large appliance repair, carpentry, and auto mechanics, but these traditional offerings are being modified as the cluster training concept is adopted. The Office Occupations cluster will be offered in September 1976, while Health, Institutional Public Service, and the Agricultural

Occupations clusters will make a debut in 1977, followed by the Manufacturing cluster. The Manufacturing Occupations cluster will be most difficult to implement because of cost factors, but this and skill training in all 15 recognized occupational clusters will be implemented by 1978.

The area-wide cooperative training program for retailing and business occupations is conducted from the center, but apprentice training programs and adult vocational programs are provided by the Battle Creek Public Schools and the Kellogg Community College.

School officials foresee other changes in providing skill training that may affect the training site. These changes include "open entry" and "open exit" to programs, with varying training time blocks from between nine weeks and two years depending upon the requirement of the skill or trade. They also anticipate that there will be increased cooperation and greater articulation of vocational-technical programs between training institutions thereby reducing costly duplication of facilities.

Flint

Manual training preceded vocational training at Flint High School in the early 1900's. As other high schools were constructed (Central in 1928 and Northern in 1929) vocational training stations were included. Vocational training was also offered at Dort Junior High School in 1936. Dort later became Flint Technical High School in 1939 and remained in service until 1959, when it was replaced by Southwestern High School. The Technical

High School was originally furnished with surplus industrial machinery and was readily adaptable for training war workers between 1941 and 1945 when it was operated 24 hours per day. The "Tech" programs included foundry, pattern making, machine shop, drafting, and metallurgy, all of which were related to the Flint automative manufacturing industries. The school did not offer programs in carpentry, cabinet making, masonry, or other building trades, even though, presumably, there was manpower need in these trades at the time. Students attended the school full time, and obtained both skilled and academic training.

Cooperative training programs in retail merchandising and business occupations were offered at Flint Northern High School beginning in 1951, and health occupations programs were introduced in the Flint Community College in 1954.

The public school system has always provided most of the vocational training for the Genesee County area students; however, General Motors Institute is located in Flint and provides intensive technical training for post-high school students. General Motors Institute students are employees of local General Motors plants who study one month and work one month as they move between the Institute and their base General Motors plant.

In 1965, the Genesee Intermediate School District conducted a study to review the needs for vocational education programs in the Flint metropolitan area. This study recommended the construction of an area skill center which was completed in September, 1969 with Mott Foundation and federal dollars being combined to finance construction. The center, which is owned by the Intermediate District and operated by the Flint Public Schools system, serves 11th and 12th grade students from 30 area high schools.

Generally, the skill center program trains skilled workers for employment in Flint industries. Course offerings are changed as student interest or manpower needs change. For example, low student interest forced the closing of the large appliance repair program and that shop was converted for training students to perform residential electrical wiring. Programs in law enforcement and nursing have been added to meet the manpower need and school officials are monitoring the small engine repair programs and may modify or discontinue them in the near future. All but two programs are conducted within the skill center. Residential building construction is provided at several sites, and food service programs are located "on-site" at Sarvis Center.

Grand Rapids

Manual training was introduced in the Grand Rapids Schools in November, 1900 in a small building at the rear of Central Grammar School. Interestingly, the program was established after the Ladies Literary Guild petitioned the Board of Education for a Superintendent of Schools who was "not only in sympathy with manual training, but who has expert knowledge that will enable him to direct such a department and avoid the increased expense for a special salaried office for this purpose."[1]

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[1] Grand Rapids Board of Education Proceedings, Vol. 1890 - 1900, p. 70

The first manual training courses included knifework, carpentry and joinery, cooking and sewing. From this very small beginning, manual training centers were developed in grammar schools throughout the city. These centers were equipped so that woodworking and cooking could be offered.

High school manual training was first considered by the Grand Rapids School Board in 1892 when a committee was appointed to determine whether a manual training program should by planned into a new high school building.[2] It was eighteen years later that mechanical drawing was introduced at Union and Central High Schools. In 1902, high school students could continue work in carpentry or cooking by returning to their grammar school manual arts center for part of the school day. The demand for high school manual training soon became so great that boys were permitted to work in the grammar school centers on Saturdays.

Manual training grew rapidly between 1910 and 1920. "Shop" work was added at Central High, and forge shop, metal work, and wood work were introduced at Union High in 1911. By 1913, Union also offered courses in cabinet making and pattern making. Automobile repair instruction was offered in Central Junior High School (later became Strong Junior High) in 1916, but a directive from the War Department in 1919 provided impetus to introducing auto mechanics in all three high schools, Union, Central, and South.

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[2] Ibid P. 90

Local attitudes about the need for skill training were changing as noted in the board proceedings of 1912-1913.

> Manual training "...was never intended to prepare pupils for any particular trade or occupation." This conclusion by a special Board of Education committee suggests that "manual training was not 'skill' or vocational training, and indicates that a mood was developing for separating what is now known as industrial education into two components, one of which became known as industrial arts and the other as vocational education.[3]

Federal government attitudes were also changing and with the enactment of Smith-Hughes legislation in 1917, the Board of Education applied for funds to conduct a study of the need for vocational education in Grand Rapids. The study team recommended that a Grand Rapids vocational school be established on what is now the site of the Grand Rapids Junior College main building. The program was housed in two residential structures and a remodeled garage. The residential buildings were used for academic work, home economics and offices, and the garage was used as a shop building. "Shop" courses included machine woodwork, woodfinishing, machine shop, auto shop, and drafting. Five teachers conducted the school for 50 full time students and 400 part-time students enrolled in both day and evening classes. By the end of the first semester, two more buildings were purchased and remodeled for the rapidly increasing enrollment.

Two years later a new brick building which is now the south section of the Grand Rapids Junior College main building was completed and the five "temporary" school buildings were closed. In 1930, the north half of the vocational school was constructed and the total school became known as Davis Technical High School.

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[3] Ibid P. 360

Programs in auto mechanics, machine shop, woodcarving, electrical motor and generator repair, house wiring, furniture making, pattern making, aircraft mechanics, food service, interior decorating, and business occupations were offered in the school. Students were enrolled in their vocational courses in three-hour time periods with the academic and related training scheduled for the other half day.

The technical high school continued in operation throughout the depression years and the early period of World War II, when in 1944 it was closed because the building was needed for the Junior College and because the cost of educating each student was so much higher than it was in other high schools. Vocational education was then decentralized by establishing specific programs in junior and senior high school buildings throughout the district. Vocational shops were opened at Burton and Harrison Park Junior High Schools and at Central High School in 1945, and at South and Union High Schools in 1947.

Another kind of vocational school was opened in 1927 because stringent entrance requirements at Davis "Tech" made it difficult for the least motivated students to enroll. The Junior Vocational School, located on South Division Avenue, served students, aged 14-17, where manual work was offered three hours per day. This work included metal shop, machine shop, handcraft, printing, shoe repair, tire repair, and broom making.

Early records of the Grand Rapids School District describe another very unique school called the Truant School. This school provided vocational type programs in wood and iron work, photography, household plumbing, printing, auto repairing, and clay remodeling and glazing. It also provided boys with work experience since selling newspapers was part of the program.

School was conducted in two sessions with the morning session running from 9:00 a.m. to 11:00 a.m., after which students were excused to sell newspapers. Afternoon sessions ran from 1:00 p.m. to 3:00 p.m. when students were again excused to sell newspapers. The sale of newspapers was considered part of the educational experience and the principal inspected the street corners twice each day to make certain each of his 35 boys was at his assigned post. The Truant School enrolled between 55 and 75 students, aged 10 to 16 and was housed in three classrooms in a junior high school building close to the downtown area.

Apprentice training was introduced in the Grand Rapids schools in 1939 when a coordinator was hired to teach related trade classes. This program was headquartered on the Grand Rapids Junior College Campus and currently enrolls apprentices in pattern making, tool and die work, carpentry, masonry, sheet metal work, plumbing, electrical, machine repair, pipefitting, welding, truck mechanics, bricklaying, painting, heating, and ventilating.

Between 1941 and 1944, war training programs were offered, both in schools and in local industries. The technical high school machine shops were operated twenty-four hours per day, providing four training shifts of six hours each. Courses in inspection techniques, processes, and precision instrument reading were offered away from the high school in the Buchanan Elementary School gymnasium and at American Seating Company.

Cooperative work training began in 1944 in Grand Rapids, when students were placed in offices, retail stores, auto service stations, and in some manufacturing industries for half days. Students were paid nominal wages while being trained and also enrolled in a regular high school for their academic study.

G.I.'s returning to their hometowns in 1945 and 1946 were hired as helpers in local business and industry at 75 cents per hour. They soon pressured the public school officials to establish training programs so they could capitalize on the educational benefits provided by the G.I. bill, thereby supplementing their earnings with subsistance payments from the federal government. The school system established the Veterans' Institute which offered training in a variety of vocational fields, including plumbing, electrical work, bricklaying, carpentry, and tool and die work.

The Vocational Education Act of 1963 rekindled the interest in skill training in the Grand Rapids area. It should be noted that during the late fifties and early sixties there was rapid expansion of school districts because of increasing numbers of high school age students and the consolidation of many small school districts, each of which were required to provide high school service. These new high schools seldom included vocational shops or laboratories.

A study committee consisting of area superintendents investigated the need for increased vocational educational opportunities for the 11th and 12th grade students. Unlike Battle Creek and Flint, the superintendents ultimately recommended that two area skill centers be constructed. One building, located on the East Beltline, was opened in 1971, offering trade and industrial type programs, while a second was completed in 1972, providing business occupations programs, related health service training, and other similar programs.

In the late sixties, an era of high unemployment and civil unrest, federal money became available for training the unemployed or underemployed with funds from the Manpower Development Training Act (MDTA). Training centers were quickly established for auto mechanics training in the Turner Elementary School gymnasium, for welding at the Grand Rapids Junior College, machine shop at Ottawa Hills High School, and office machines training at Central High School. Eventually new programs were added in construction trades, recreational vehicle repair and maintenance, and auto body repair.

When Turner School was razed, the automotive programs were moved to a vacant garage located near the downtown business district. This garage was demolished in November of 1975 because it was located within an urban renewal clearance area.

At that time, the automotive, construction trades, and recreation vehicle programs were moved to a newly renovated section of a vacant department store on the north side of the city. This 20,000 square foot area is now leased by the district from a New York firm for five years. The training program is funded with Comprehensive Employment Training Act (CETA) federal funds which are authorized by the Grand Rapids Area Manpower Planning Council.

History of Training Sites - Summary

There are many similarities and some differences in the evolution of vocational programs in Battle Creek, Flint, and Grand Rapids school districts. These similarities and differences also occur when examining each district's solution to providing training sites for vocational education.

Manual training, the godparent of vocational education, appeared in some form in all three districts between 1890 and 1900. Shops and classrooms were either provided in "recycled" space, as was true in Battle Creek where they were placed in the "Old Mill" or in specially-equipped rooms in newly built grammar schools, as was true in Grand Rapids. On-the-job training, to the extent it existed, was not considered a responsibility of the educational institutions at that time.

During the early 1900's, as more students were staying in school beyond the eighth grade, new high schools were constructed. Manual training shops and laboratories were often included in these buildings.

Federal legislation provided impetus to planning for comprehensive vocational education programs in all three districts in 1917. Surveys of the need for vocational education eventually led to the construction of high schools which were designed specifically to house vocational programs. Battle Creek built its vocational school in 1923, Grand Rapids built its school in two phases, one in 1917, with an addition in 1930, and Flint completed its technical high school in 1939.

There is no evidence that school systems were providing cooperative or on-the-job training until apprentice training programs emerged in the late '30s, partly because there was little need for apprenticing in industry until then. Most skilled artisans came to this country in great numbers during the early 1900's and there was little need for industries to provide on-the-job training because of the steady supply of immigrants from Europe. During the depression years, those with skills were employed and the unskilled were unemployed and immigrants were prohibited entry into the country. Suddenly industry became concerned about the supply of trained workers. In most cases the best trained "teachers" for apprentice training and the best facilities were within the shop or factory and only the related work, such as English and math, needed to be provided by the school systems. Many of the skilled trade apprentice programs began in 1938 or 1939, and continue in the same form today.

During World War II, when industries were using all facilities 24 hours per day and seven days each week and the demand for workers was insatiable, schools were called upon to provide specialized vocational instruction known as "war training" in whatever school facilities were available. With the return of G.I.'s after the close of the war and the desire to earn more money and to capitalize on the G.I. bill educational benefits, programs called "Veteran's Institutes" came into existence. These part-time vocational programs were generally housed in school facilities although the G.I. bill also provided educational benefits to those who were training on the job.

Cooperative training in retailing, office, and service occupations began in all three districts in the late '40s. It was generally offered as a 1/2 day on-the-job training experience coupled with a half day in school.

The vocational schools that were opened during the '20s had generally undergone changes in their clientele and program emphasis by 1940. In some districts they had become "dumping grounds" for truants, recalcitrants, or low achievers, and in other districts they had become special high schools for the select or elite. In either case, districts slowly dismantled the schools and their vocational programs were scattered into several high school buildings. Concurrently, the American high school curriculum was being reshaped because of the influence of James B. Conant and other proponents of the general comprehensive high school. In 1958, the nation was shocked and puzzled when the Russians became the first to successfully launch and place a satellite in orbit. The U.S. Government turned to its educational institutions and asked for improved training in mathematics, science and language. It was predictable that the emphasis on scientific training would be followed closely by an examination and revival of vocational and technical education. Legislation in 1963 energized the nation's school systems to examine, to survey, and to create new programs which ultimately led to the development and construction of a sleek "fleet" of area skill centers all across the land. These new vocational training sites generally serve areas larger than a school district. In Battle Creek, 13 districts are served; in Flint, 21 districts are served; and in Grand Rapids, 20 districts are served.

In the late sixties, with high unemployment and civil unrest, new training programs emerged. Initially they were known as MDTA (Manpower

Development Training Act) programs and later as CETA (Comprehensive Education and Training Act) programs. These programs were housed in existing school space, store fronts, former factory buildings, abandoned garages, or whatever space could be found. The uncertainty of the funding duration forced school districts to house these programs in temporary facilities.

Criteria for Determining the Most Effective Training Site

Several kinds of training sites have been used and are being used for vocational training. There is no one best site for all programs. To assist the vocational planner in finding or providing the most suitable training site without unnecessary cost, a series of questions can be asked and answered which are related to the criteria for translating the educational program requirements into facility requirements. These criteria are:

1) The degree to which the training experience can be separated into two parts, one of which is best provided on the job and the other which is best simulated in a laboratory or shop or taught in a classroom.
2) The number of persons enrolled in the program.
3) The initial cost of providing the training station.
4) The probable duration of the program.
5) The total work area required for each training station.
6) Whether or not "prime" time is required for instruction.
7) Whether the training site is confinable or non-confinable.

8) The volume and cost of the production which results from the training experience.
9) Safety, contractual, and statutory considerations.
10) The desired instructor/trainee ratio.
11) The accessibility or availability of an existing facility for training.

The text which follows will explain in greater detail the meaning of each planning criteria and will illustrate how each of these criteria can be transposed into questions that help the planner in determining the kind of training site necessary to support a specific vocational program. From the original question and response, a weighted rating system can be developed to assist the planner in identifying the best training station for training a tool and die maker or a typist. The higher the accumulative response rating, the more likely the training site will be in a school setting.

Criteria #1 - Separation of Training Experience

Can the training experience be separated into two parts, one of which is best provided on the job and the other in a classroom, laboratory, or shop, and what portion of training occurs in each setting?

For example, most of the training for tool and die making can take place on the job. The layout, machining, grinding, and fitting of parts are experienced most effectively in the "real" situation. There are also, potentially, as many teachers as there are skilled tradesmen on the training site and their competencies are current with today's methods and materials. Related work, such as mathematics, metallurgy, and heat treating, can be provided in a classroom or laboratory setting.

On the other hand, typist training can be provided in a simulated experience. "Real" work need not be done. On-the-job training for a typist would be more costly, less efficient, and perhaps less effective. Sample question and response:

What percent of the vocational training is best provided on the job and what percent is best provided in the school?

Tool and Die Maker Training

Percent of on-the-job training

☐ less than 25% (1) point
☐ 26% to 50% (2) points
☐ 51% to 75% (3) points
☒ Over 75% (4) points

Typist Training

Percent of on-the-job training

☒ less than 25% (1) point
☐ 26% to 50% (2) points
☐ 51% to 75% (3) points
☐ Over 75% (4) points

Criteria #2 - Number of Enrollees

How many students are interested in the training program?

Whether the training is offered on-the-job or in a school may be influenced by the number who are interested. For example, skill centers seldom have enough students to fill a class in large appliance repair. Does that mean that training should not be offered at all? No. It means that these students should be given the opportunity to train on-the-job under the tutelage of a skilled repairman. The above question, when converted to a test question, appears as follows:

How many students are interested in the specific skill program?

☐	Less than five	(0) points
☐	five to 15	(1) point
☐	16 to 25	(4) points
☐	Over 25	(6) points

Criteria #3 - Initial Cost

Sample question and response:

What does it cost to provide the initial training station?

It would be extremely costly to provide enough computers to adequately provide a training station for computer service trainees. Conversely, the training station for keypunch training is relatively inexpensive, in fact, most of the training can be simulated on an electric typewriter at a comparatively low cost.

What is the cost per student to provide the initial training station?

Note: Do not consider building costs.

Computer Repair Training

☐	less than $500	(10) points
☐	$501 to $1000	(6) points
☐	$1001 to $5000	(3) points
☒	Over $5000	(0) points

Key Punch Operator Training

☐ Less than $500	(10)	points
☒ $501 to $1000	(6)	points
☐ $1001 to $5000	(3)	points
☐ Over $5000	(0)	points

Criteria #4 - Program Duration

Sample question and response:

Is the training program of long duration or is it apt to be discontinued within a short period of time?

Some vocational training programs may be of short duration; for example, many MDTA or CETA programs are funded on a year-to-year basis. When the funding stops, the program is discontinued. In other instances the labor market may be saturated temporarily as was true in the case of construction workers in recent years. The question probing the durability of the training program reads as follows:

How long will the training program continue?

Welding (CETA)

☐ Less than two years	(1)	point
☐ Two to five years	(3)	points
☐ Six to ten years	(6)	points
☐ Over ten years	(10)	points

Criteria #5 - Work Area Requirement

Sample question and response:

How much total building area is required for each training station?

A training program for department or grocery store management would require spaces large enough to accommodate the multiplicity of learning tasks while a training program for a cashier would require a relatively small training station.

How much area (in square feet per student) is required for the training station?

Department Store Manager Training

☒ Over 250 sq. ft. (0) points
☐ 101 to 250 sq. ft. (3) points
☐ 51 to 100 sq. ft. (6) points
☐ less than 50 sq.ft. (10) points

Cashier Training

☐ Over 250 sq. ft. (0) points
☐ 101 to 250 sq. ft. (3) points
☐ 51 to 100 sq. ft. (6) points
☒ Less than 50 sq ft. (10) points

Criteria #6 - Scheduled Time

Is "prime time" desired or required for instruction?

This question should encourage the planner to consider using training sites that are already properly equipped and readily available but which may not be available during the usual 8 a.m. to 3 p.m. school day. To illustrate, check out or cashier training stations are not in use in super markets or department stores between 9 p.m. and 9 a.m. Automotive service garages, such as Sears, Montgomery Ward, etc., are not in use between 9 p.m. and 9 a.m. Could they be used for vocational training during these hours or on weekends?

Can the training occur other than between 8 a.m. and 5 p.m. and are there training sites available?

Cashier Training

☐	Site available 8 a.m. to 3 p.m.	(0) points
☐	Site not available 8 a.m. to 3 p.m.	(3) points
☐	Instruction can occur after 3 p.m. or before 8 a.m.	(3) points
☐	Instruction cannot occur after 3 p.m. or before 8 a.m.	(10) points

Criteria #7 - Confinement of Training Station

The wide distribution of elements within a work station may make simulation difficult. For example, building trades skill training is best provided on the job, because it is difficult to simulate all of the tasks in a school setting. It would also be difficult to repeat the task enough times in order to refine the skill in a classroom. By contrast, a welder can learn and develop welding skills in a rather limited or confined space.

Sample question and response:

Is the training experience ubiquitous or confined?

Carpenter

☒	Non-confinable training experience	(0) points
☐	Confinable training experience	(10) points

Welder

☐ Non-confinable training experience (0) points

☒ Confinable training experience (10) points

Criteria #8 - Volume and Cost of Production

When training meat cutters, such a volume of meat is produced that the training should occur where the finished product is packaged and marketed. Schools do not have an outlet for this kind of production. In training for printing production, volume is high but the total produced cost is relatively low and can be salvaged or recycled if it is not directly usable.

Sample question and response:

Is the volume and cost of production which results from the training experience such that it warrants on-the-job training consideration?

Meat Cutting

☒ High-volume or high-cost end product (0) points

☐ Low-cost, low-volume, or no end product (10) points

Printing

☐ High-volume or high-cost end product (0) points

☐ Low-cost, low-volume, or no end product (10) points

Criteria #9 - Safety, Contractual, or Statutory Considerations

There are some occupational training programs that present safety considerations such as training for excavating and earth moving, or there are statutory considerations such as bartender training or there may be contractual limitations where leased equipment such as computers, copy machines, and other similar equipment may not be serviced by other than authorized trained personnel.

Sample question and response:

Are there safety, contractual, or statutory considerations that would require that the training occur on the job rather than in a school setting?

Excavating, Grading Training

☐	Safety considerations	(0) points
☐	Contractual considerations	(0) points
☐	Statutory considerations	(0) points
☐	None of the above	(5) points

Criteria #10 - Instructor/Trainee Ratio

Skill elements are so diverse and varied in occupations such as tool and die maker training that the relationship between the teacher and the learner is frequently one-to-one. By contrast, teaching of typewriting is so standardized that the instructor/trainee ratio can be very high, in fact, sometimes the training is directed by television or other audio-visual systems.

Sample question and response:

What is the desired instructor/trainee ratio?

Tool and Die Maker

☐	Fewer than four trainees per instructor	(0) points
☐	Four to 10 trainees per instructor	(3) points
☐	11 to 25 trainees per instructor	(6) points
☐	Over 25 trainees per instructor	(10) points

Criteria #11 - Availability of an Existing Facility

When occupational training programs are first implemented, whether they are "on-the-job" based or school-based, depends upon whether a training site for school-type training is available. The planner should consider the possibility of an "on-the-job" site before he decides the program cannot be offered because there is no site for training.

Sample question and response:

Is there an existing facility, fully equipped and operational that can be used for a training site?

Service Station Management Training

☐ Yes (10) points

☐ No (0) points

Criteria Summary

After the planner has answered each of the eleven questions, the values assigned each response are totaled. A very high total, let us say 50 or more, will suggest that an "off-site" training station is most suitable for the program. If the total is less than 50, it is likely that the "on-site" training station is most desirable. Even when the "off-site" or school-type training facility is suggested, it does not mean that a school building must be built and equipped. A suitable training site may already be available if the answer to the sixth question indicates that the courses can be taught outside of school hours or if the training site can be used for one or two hours during the school day when not needed by the prime user. It may be possible to schedule the class in available school space after school hours, nights, weekends, during Christmas or spring recess, or summer vacation periods. Much of this space is equipped and ready for use. Building and equipping new space should be thought of as a "last resort" rather than a first consideration.

Finding Training Stations

"On-Site" Training Stations

School-type training sites are placed in one of four categories and representative buildings are listed in each group.

1. School Building
    - a) public
    - b) private or parochial
    - c) college or university
    - d) relocatable and mobile classrooms
2. Other Public Buildings
    - a) city and township halls
    - b) courthouses
    - c) fire stations
    - d) police precinct stations
3. Quasi-Public Buildings
    - a) churches
    - b) museums
    - c) hospitals
    - d) railroad depots
4. Privately Owned Buildings
    - a) office buildings
    - b) grocery retail stores
    - c) department stores
    - d) warehouses
    - e) service stations
    - f) hotels
    - g) theatres
    - h) dairy

i) bus depot
j) restaurant
k) garage
l) apartments
m) houses
n) shopping center spaces

The planner can add to this list but in order to expedite the search, a file of potential training sites should be developed and maintained. The list should include vacant buildings, partially vacant buildings, or underutilized buildings.

The list of available sites can be obtained by contacting school districts, superintendents, private school administrators, church boards, and realtors. Ask for sufficient information about the space so that its suitability for school use can be determined easily. Sample questions that should be included on the inquiry are:

1) What is the overall size of the space in square feet?
2) What are its major dimensions? (length and width)
3) Is the space on one floor and at grade level?
4) Is the heating plant separated from the rest of the building by non-combustible partitions (concrete block or concrete walls)?
5) How many stories or floors are there in the building?
6) Is the building free of "architectural barriers"? In other words, are there ramps and elevators to provide for easy movement of handicapped persons?
7) Are stairways separated from corridors with "fire rated" doors?
8) May the lessee modify the space, i.e., install or remove walls, add plumbing, change the electrical system, etc.?

9) Is the building rated as fire proof, fire resistive, or combustible by your fire insurance carrier?

10) How much off-street parking is available?

11) Are there overhead service doors into the space?

12) Are there potential safety problems? Is the building near a railroad, freeway interchange, major street, or waterway?

Answers to the above questions will aid the planner in locating vacant space. Ready-equipped training sites can be located in the same way that "on-site" stations are found; therefore, they were not considered with other school-type facilities. Different questions will be asked about the space and different people will be queried about whether space and time are available.

Finding "On-Site" Training Stations

"On-site" training stations or "on-the-job" sites, as they are frequently named are found wherever people are employed in the particular occupations for which the student is preparing. Skilled trades apprentices, and retail sales, secretarial, and office occupations trainees are those whose training most often occurs on the job. Building trades students who are learning carpentry, electrical wiring, plumbing, or masonry frequently develop their skills "on-the-job." The job in this instance is usually a school sponsored construction project; therefore, one or two classes of students complete the total job over a period of several months. In effect, it is a "school-type" experience "on-the-job." As mentioned previously, school-type training can be located in fully equipped facilities if training can occur when the factory, the shop, or the store is not otherwise being used.

The vocational planner should develop a directory of "on-the-job" training sites for each or as many of the occupations as possible and a second list of commercial facilities in which entire classes of students could be trained. Every community is rich with training site resources. When the automotive service garage is not being used at the local Sears, J.C. Penney, Wards, or Firestone store, why not use it for training auto mechanics? When the check-out stations in the local grocery chain stores are not being used for sales, why not use them as cashier training stations? Can an airliner be set up as a training site for flight attendants at the local airport? Can school bus drivers and city coach drivers be trained by actually operating the equipment when it is not being used on scheduled runs? Can the local fire and police training stations be used by school-age students when they are not in use for training firemen and policemen?

The planner should consider the many training site possibilities that exist in every community. There will be many obstacles to using these sites and teachers and business owners will resist. To overcome or reduce the resistance, consider hiring skilled workmen from the industry or business as part-time instructors and be willing to reimburse the owner of the training facility for all costs incurred as a result of the instructional program. Government should also consider legislation to encourage the businessman to share his facility for training purposes by providing tax relief incentives to those who will participate. Perhaps private business could be encouraged to modify their facility when it is initially planned so that it will better accommodate the training function if incentives are provided.

There are other problems to be overcome including transportation to the training site and scheduling of classes in times when space is available. All of these problems can be solved, for they have been surmounted previously in times of national emergency. If society truly wants to conserve its resources and avoid needless waste, it will find better ways to provide school facilities.

Summary and Conclusions

The possibilities for vocational training sites is limited only by the imagination of the planner. Historically, there were many types of spaces in a wide assortment of buildings that were used as vocational facilities. The kind of facility varied also according to whether or not money was available from the federal government for construction. If money was available, vocational schools were built as happened in the early 1920's and the late 1960's. If money was available for program only, as was true during World War II, again after the war through the G.I. bill and finally in the late '60s, to curb unemployment and to provide training as in the MDTA and CETA programs, then buildings were not built. Training space, wherever it could be found, was used.

There is little doubt that skill training and vocational education will continue to be a major responsibility of educational systems and that business and industry will expect educational systems to do more of the necessary training. Business and industry will also likely become more involved in determining both the quantity and quality of the training. In other words, vocational training will be done to satisfy the needs of trainees and employers rather than to accommodate the wishes of the educators. As business and industry, trainees, and school systems become co-equal and cooperative participants in the training process, fewer shops and classrooms will be built because business and industry will want to provide the training facility within their buildings. School systems will provide the staff, the financial resource, the educational program, and the instructional expertise to do the training in the least amount of time and at the lowest cost.

VI

VOCATIONAL EDUCATION INSTRUCTIONAL PERSONNEL

INTRODUCTION

In recent years, a keen awareness of the role of vocational education has developed. With this awareness has come a necessity to candidly look at some efforts to identify, recruit, select, and develop personnel in this field. These efforts have not been sufficient to date. Teachers are the most important element in a school program -- more important than the quality of materials and equipment, the quality of the facilities or the level of financial support.

This chapter then is concerned with vocational education teachers. It will reflect research into and opinions and biases about instructional personnel practices and procedures. The problems relevant to instructional staffing are determined through an examination of historical perspectives of past procedures, present practices of selecting teachers, and future needs. Financial considerations that impact, and in part guide decisions, are examined in the following sections and will not be included in this chapter.

Overview

Demonstrating the significance of vocational education in the United States is the fact that in 43 of the 50 states over half of the secondary students were reported enrolled in vocational courses during the school year 1973-74. Enrollment in vocational education programs or courses totaled 13.5 million students, an increase from 12 million in 1972-73. Secondary enrollments increased 14 percent from the previous year, post-secondary enrollment increased 18 percent. (Project Baseline Report, 1975)

Due to the increasing concern with the relevance of education in helping the individual to find a job and career, this country has in recent years developed an awareness of the role and importance of vocational education. Unfortunately, this awareness is not always translated into concern for instructional personnel. There has not been the same substantive effort to identify, recruit, select, and develop instructional personnel for vocational education programs as in more traditional academic curricula. Often decisions are based on tradition, crisis reaction or regulation, and frequently such decisions become policy.

Teacher tenure, small classes, resistance to innovation, and instruction not offered in a particular subject until long after the need has arisen are all factors contributing to a less than ideal situation in the realm of instructional personnel. (March 1966) Yet teachers are the most critical element in any school program--more important than the quality of materials and equipment, the quality of the facilities or the level of financial support.

Historical Perspectives

If the future is to differ and improve upon the past, both must be subjected to unprecedented scrutiny. Inevitably, the future is a coalescence of what society and its subdivisions desire and what technology and education can provide given economic, legal and other constraints of the times.

The needs of society and education can be approached from two angles: 1) by determining goals and values, and 2) presenting what can be done. By starting with the latter, one runs the risk of presuming to define what is wanted and needed by society, yet educators, scientists, and engineers do have valid opinions about the uses of education and technology and therefore should be a part of the process.

A brief review of historical evolution of vocational education in the United States should result in a better understanding of the problems involved with teacher selection that must be faced now and in the future. The appropriate recruitment, preparation, development and the qualifications of vocational education teachers are nationwide problems. An analysis of the historical matrix from which these problems arose could provide a better understanding on how to solve them.

The evolution of vocational education as it exists today began with the passage of the Morril Act of 1862, which provided for higher education instruction in both the practical and liberal arts. At the time, however, most entering high school students were considering that the terminal point of their educations. Educational prerequisites for most jobs available were almost non-existent, and students complained of little relevance between the classroom and the world of work. (Venn, 1964) In an effort to bridge this gap in the educational content of the era, Calvin Woodward opened a vocational training school in St. Louis during the 1880's. Although the school was closer to the concept of "career education" rather than "vocational education," the appearance of shops within schools was at a beginning. (Venn, 1964)

Vocational education as a federally funded program in the United States did not exist prior to the Smith-Hughes Act passed by Congress in 1917. From 1917 through the 1950's the program functioned fairly effectively and required only minor amendments to the original act. The leadership and administration of vocational education in that period held firmly established beliefs guided and influenced by the early provisions of that act. (Delzer, 1972) The nature and concept of vocational education changed very little until 1963 with passage of the Vocational Act. (Williams, 1971)

With the advent of manual training and the early beginnings of vocational education, the same difficulties surfaced as far back as the late 19th century that are still evident today. These include (1) the inherent danger of developing dualism in the educational system; and (2) the need to recruit and train instructors with both trade skills and teaching ability. These early concerns became the subject of debate and articles pertaining to the field of vocational education. (Dewey, 1908) (Prosser, 1912), (Fisher, 1967), (Prosser and Quigley, 1935), (Hughes, 1924).

The passage of the 1963 Vocational Act ushered in the beginning of the modern era in vocation education. Changes in the economy required new legislation and foremost among these needs were: 1) an increase in potential students, 2) holding down increases in costs, 3) expansion of occupational areas, and 4) the need for better cooperation between vocational services and agencies. (Milan, 1972) In 1968 important amendments were made to the 1963 Vocational Act which were intended to diminish the separation between vocational and academic education and to help stimulate rapid growth and expansion of vocational education in both programs and enrollment. With this rapid expansion of vocational education that took place in the late 60's and early 1970's came an even greater concern and search for qualified teachers who had both trade skills and teaching ability.

Practices And Perspectives

As stated earlier, the teacher is the most important element in a vocational education program. Yet the appropriate recruitment, preparation, qualifications, and selection of teachers are and have been continuing problems since vocational education was first introduced into the public schools.

The demand for instructional staff in vocational education is a derived demand, which is determined by the demand for vocational education. If the demand for vocational education remained constant, the demand for teachers would also tend to be stable. Teachers would need only to be recruited to fill vacancies created by death, retirement or transfer to other occupations. If on the other hand, the demand for vocational education changes rapidly, the demand for teachers changes even more rapidly.

Actually the situation is more complex than this because supply and demand vary greatly from one field of vocational education to another (hence the chapters on manpower and student interest projections), and from one year to another. Under current practices a teacher of body repair is not interchangeable with a teacher of food services. Even so, the need for cross-training has in recent years become a significant factor in all areas of education and has significant implications that cannot be ignored for vocational education. Cross-training is the training of a teacher in new or related areas of expertise in order to increase flexibility of vocational education staffing.

The problems, needs, and accomplishments of instructional staffing for vocational education are numerous. Present practices have met the needs but may not continue to do so; cross-training and professional development becomes an ever increasing responsibility; and the demand for certification standards is growing. These are the problems facing vocational education and this chapter has been developed out of the matrix of these challenges.

Current Practices

Presently the practices and procedures for determining need and selecting personnel to meet demand differ little from those of two generations ago. The procedure follows the traditional form of: 1) a decision is made about program offerings; 2) enrollment information is gathered; 3) the need for teachers is determined; 4) the search for a teacher begins. Often a qualified teacher is available, often not; yet a teacher is needed and a teacher is found. This process is planning, but planning on a "crisis" semester-to-semester, year-by-year basis.

When selecting teachers for vocational education, it has been the pattern that they are recruited from the trade itself with little or no college training and perhaps no prior plans or preparation for teaching.

Several writers have examined this problem. Leighbody (1966) stated that vocational educators have long insisted that subject competence can only be attained by experience on the job and that in order to secure teachers it is necessary to convert craftsmen. Fisher (1967) suggested that the question of what is the ideal combination of practical experience and educational background necessary to produce the optimum teacher has been debated for over 50 years. In 1970 Cain wrote that the problem of staffing vocational education program involves achieving the proper balance between work experience, formal experience, and teaching ability.

Thus many vocational education teachers, particularly those in trade, industrial, and technical areas, have backgrounds and training quite unlike that of academic teachers and for those vocational teachers in the fields of agriculture, home economics, business and office, and distributive and cooperative education.

The recruitment of complete teachers, difficult at all educational levels, is especially so in vocational education. Teachers in this area, particularly with the program's present emphasis on shop instruction and job expertise, must bring a high level of job skill and experience to the classroom.

Since enactment of the 1963 legislation, the majority of vocational education teachers have been recruited from non-educational sources and many have had rather limited professional backgrounds. The key to perceived success has probably been due to a lack of close supervision and the fact that most teachers prepared by this method have been required to obtain additional teacher training courses within a year or two. (Ward 1971)

The process by which the number of teachers needed for instructional purposes is calculated has been almost wholely based on enrollment. Most states utilize a pupil-teacher ratio formula to determine the number of students in a single classroom with a single teacher. Vocational education often adds an additional input to that formula, a variable referred to as the number of work stations available. Thus the procedure for planning the number of teachers needed is usually reduced to simply determining enrollment and dividing work stations available to arrive at how often the class must be given. Class offering frequency determines the number of teachers needed and a simple comparison of numbers of teachers available to the number required produces the number in excess or the number that must be secured.

This type of planning is attractive and amenable to goal setting. It tends, however, to deal with conventional interpretations of needs, organization of instruction, and measures of success or failure.

When performed on a term by term, year by year basis this method can always calculate the number of required teachers, but it may not create the most qualified staff, since short term planning rarely if ever anticipates or prepares. This procedure has its merits, however, and if incorporated into a comprehensive long-range planning scheme it can prove to be a most accurate method for predicting future needs. Using information related to current enrollment and programs along with future projections, the planner can anticipate instructional requirements and meet needs in an organized systematic fashion. Perhaps the greatest advantage accruing to planning for instructional needs, is the increased time available to search for and develop qualified staff. As these patterns become comfortably and systematically repetitive, the original assumptions begin to take on validity.

Supply

The question of teacher supply in vocational education programs is of quite a different nature than the supply issue for teachers in traditional elementary and secondary school systems. Project Baseline Report, Learning a Living Across the Nation, Volume 4, (1975) reports that while there existed an abundance of teachers in the job market, the number of full-time equivalent vocational education teachers at the secondary level did not rise fast enough during 1973-74 to keep pace with enrollment increases. During this year the supply of vocational education teachers rose nine per cent at the secondary level and 15 percent at the post secondary level. In the three-year period, 1971-74, the absolute number of vocational education teachers increased by more than 50,000 while at the same time vocational student enrollment increased by more than three million, a ratio of 60 new students for every additional teacher.

The Baseline Report projects that this shortage of vocational education teachers may not improve over the short run since during the years when pupil enrollment was up 12 percent, future teacher enrollment increased only one percent. As student demand for vocational education drops off, however, with the declining birthrates of the late 50's and 1960's, supply may be expected to come closer to meeting demand.

Projecting, recruiting, and training the needed number of instructors for vocational education is a delicate task given the constantly changing patterns of supply and demand. Although in recent years the number of vocational education teachers has increased, the additional supply has not been sufficient to keep pace with rising enrollment. The Baseline Report shows that a majority of states reported some degree of shortage in certified teachers for vocational education during 1973-74.

Given such a shortage that could well be temporary what are some possible solutions? Project Baseline noted that over half of the vocational education teachers in the nation perform non-vocational or academic assignments as well as vocational education courses. If the teacher shortage becomes critical, these instructors could be utilized for more vocational teaching. This solution does, however, pose the unfortunate consequence that as the vocational teacher is removed from the traditional academic setting, the dichotomy between academic and vocational education might be encouraged. A major thrust of the 1963 Vocational Education Act was directed against this dichotomy, Another potential solution covered in the next section is cross-training.

With the present-day shortage of vocational education teachers and fluctuating supply and demand, the need for a systematic plan to determine the number of types of teachers for more than one year at a time is apparent.

Cross-Training

One possible solution to a shortage of qualified vocational education teachers is an organized program of cross-training, the training of teachers for instruction in related or new subjects other than their first area of expertise. One major challenge facing vocational education is the continuing development of new occupations and the elimination of others in a relatively short period of time. Job tools, materials, techniques and number of teachers in a particular field change as new processes and technology evolve. Vocational education teachers need to be made aware of the changes taking place within occupations in their area of specialization as well as being prepared to expand areas of expertise in times of emergency.

To date few efforts have been launched in this direction and initial efforts into cross-training program activities have been frustrating. Felstehausen (1973) and Sexton (1974) reported that although this vital concept is supported at the state level there is no substantial evidence that school districts or individuals are encouraging or participating in cross-training activities.

The vocational education enterprise, including teachers, must face the same changing socio-economic outlook as do the students. Many students are now enrolling in vocational education courses for the sole purpose of cross-training themselves to better compete in a shrinking job market. Vocational education teachers could possibly take a cue from students and qualify themselves to perform in a variety of areas within their field.

Cross-training need not only be encouraged from a standpoint of self-preservation. Vocational instructors could be offered incentives through scholarships, fellowships, leaves of absence and other financial rewards. Employing vocational teachers on a full-year basis and setting aside the summer months for improving and widening teaching skills and areas of expertise is a positive strategy. Teachers lacking degrees would be encouraged to work twoard the baccalaureate.

Cross-training could afford teachers an opportunity to acquire new skills as well as helping to up-grade overall teaching skills since these teachers would be placed in the position of being students again. In addition, cross-training would expose teachers to a variety of instructional methods and procedures. Much discussion is occuring today in the field of education regarding such topics as individualized instruction, competency-based instruction, task or job analysis, behavioral objectives, and performance-based and personal development programs. During a cross-training period a teacher could identify individual needs in this area, and strive for work experiences which might fulfill these needs. (Sexton 1974)

Instructional Quality

A desire for highest quality seemingly needs no defense, regardless of the product or craft involved. Yet the consideration of quality in any setting seems to provoke controversy. (Lynd 1976)

A part of the debate regarding quality traces back to ambiguities within the concept itself. As Carter (1966) notes: "In an operational sense, quality is someone's subjective assessment, for there is no way of objectively measuring what is in essence an attribute of value." Blackburn and Lingenfelter (1973) suggest that although quality may be more than the sum of its parts, communication is facilitated and controversy is mitigated when quality is defined in terms of its component parts. If the objectives of an institution or program are defined, an assessment of its quality principally considers the degree to which those objectives are attained.

This section will examine several dimensions of quality related to vocational education teachers. Qualifications of teachers, processes of evaluation and certification will be considered.

Teacher Qualifications

Vocational education programs must be carefully assessed by administrators and planners to determine the kind, number and qualifications of persons needed for operation. Attention must focus on teacher training and experience in light of the jobs to be performed and the qualifications written for persons to fill the positions. In outlining the qualifications of vocational education personnel, consideration should be given to the following:

1. General education required
2. Technical knowledge and training
3. Professional education expertise
4. Work experience
5. Professional experience, if applicable

Qualifications of instructional personnel should be set at a level giving reasonable assurance that needed instructors can be found and at the same time provide a quality program. Difficulties in securing well-rounded vocational teachers may make it necessary on some occasions to employ persons who have less than full qualifications. Steps should be taken to assure that these instructors will achieve full qualifications as rapidly as possible. (Allen, 1974)

Provisions are made to assist the training and upgrading of professional personnel in vocational education under Title II of the Vocational Education Act and part C, D, and F of the Professional Development section of the Higher Education Act of 1965. It is suggested that the planner and administrator incorporate this phase in all programs.

Vocational education teachers must bring several unique sets of skills to the job beyond those required of any successful teacher. Allen (1974) recommends four qualifications vocational education teachers should possess. These include:

1. The teacher should make use of instructional methods appropriate for the students and which contribute subsequent employment qualifications.
2. Teachers should have the ability to help students make the transition from teacher-directed learning to self-directed learning.
3. Methods of instruction and learning which will persist when students enter full-time employment should be utilized by the teacher.
4. Learning activities and projects should be conducted in such a way that students develop multiple capabilities and competencies which prepare them for employment.

Evaluation

The evaluation of vocational education personnel is most intense during the initial hiring process, yet it should be an ongoing activity, performed throughout the teaching career of the individual. The following criteria are generally recognized as useful for selecting, retaining, or promoting vocational education personnel:

1. Educational training
2. Experience
3. Present employee of the school system
4. Personal references
5. Performance
6. Certification
7. Employment record
8. Interest and attitude toward vocational education
9. Success
10. Working and teaching relationships with vocational education students.

All of these factors must be balanced and viewed in a total perspective. It is conceivable that even a wide variety of occupational experiences could add little to an employee's bank of occupational skills that would aid in a successful teaching career. Furthermore, the level of responsibility held by an employee during working experience can be misleading. The true educational worth of occupational experience is the applicability of the skills learned to the individual's current teaching area.

Evaluation is not just a particular methodology, or a routine for informing decision-makers about which alternatives to take, or a certifying function. At the same time, evaluation is not just quality control, cost effectiveness, or accountability, nor is it merely a question of how objectives of some program or class have been attained. It is all of these in part; but in the broadest sense, evaluation is a judgement concerning the worth of something. The priority question is not "What are the objectives?" but rather "What are the consequences?" It's important to know what an individual or organization meant to do, but more valuable and instructive to assess what really happened, intended or not. (Lynd 1974)

In the evaluation of vocational education instructional personnel, therefore, the best and fairest criteria appears to be productivity. Productivity itself is one of the more difficult educational concepts to define and measure and the field of education at all levels has yet to come to grips with this problem.

Certification

The primary purpose of teacher certification is to insure the public that the teachers serving them evidence certain moral, physical and academic standards. No attempt will be made here to outline the specific requirements for certification since they vary not only from state to state but from area to area. Certification does possess a dimension above the obvious. It permits competency identification and appraisal. Applegate (1972) theorized that the recent attention given competency-based education is the result of a current wide-spread interest in revitalizing the practice of certification. He indicated that the momentum for performance-oriented certification is becoming evident in many states.

Righthand (1971) pointed out the need for certification but with emphasis placed on flexibility and for constant review of the standards. He contends that requirements should vary with the teaching assignments and should provide for temporary or emergency certification. Certification by college is inadequate, he reasons, and greater emphasis should be placed on teaching performance rather than academic studies.

Summary and Conclusions

The world of work has a demand for people with specialized skills and to fill this need looks to the graduating student and other members of the labor force. Students look to school and teachers to provide skills required for success in the labor market.

If the needs of the labor market go unmet, the blame is first thrust upon students but soon moves and ultimately comes to rest on the educational system. There are many reasons why major needs of students and the labor market go unfilled, however, the most basic is the factor of continually changing technology. If a vocational instructor does not possess both teaching and technologic skills and above all adaptability, students will be ill-prepared for the world of work.

From this brief exploration into the problems of instructional personnel several conclusions can be drawn:

1. Estimating demand for vocational personnel is a constant challenge. The best method available is based on actual and projected enrollments, for enrollments do reflect a demand for instruction.

2. The use of cross-training programs to alleviate problems of teacher shortages and sudden changes in demand for particular vocational education programs is still very limited. It is difficult to determine whether or not initial development toward cross-training has been prompted by program redirection and change or self-preservation. And yet there is no measure of the extent to which a system of incentives and rewards for cross-training is linked to participation.

3. Present practices of personnel planning for vocational education are reasonably effective in meeting year-to-year objectives, but rarely anticipate long-term trends and needs.

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VII

ACCOUNTING AND BUDGETING FOR VOCATIONAL EDUCATION

INTRODUCTION

We would all appreciate having unlimited financial and human resources at our disposal. However, this is usually not the case, and we are constrained by many factors both within and beyond the local education agency.

One of the most important aspects of planning is the efficient allocation of scarce resources to implement planning goals and strategies. In terms of vocational education, this means that programs must be structured to meet external objectives such as student interest and job placement. The structure must also provide for efficient internal operation. An essential element in determining whether objectives are met is knowing the real cost of offering a specific program.

This chapter is intended to provide the planner who lacks accounting experience with some of the background for implementing program planning and budgeting and to put forth some recommendations for restructuring local accounting practices to make them more useful for planning purposes.

The first section of this chapter summarizes the financial background and federal trends in vocational education. The second section provides some background and basic concepts of program budgeting. The *third section outlines the basic steps for implementing program budgeting at the local level. The last section is a summary and set of recommendations to integrate budgeting and planning practices.*

Federal Background of Vocational Finance

The historical basis for vocational finance was set with the passage of the Smith Hughes Act of 1917. This act established the foundation and philosophy for vocational education. Very little of the philosophy changed for the next forty-six years. Much of the legislation which followed the Smith-Hughes Act up until 1963 reinforced the concept that vocational education should be centered on skill development for very specific occupations.

Most states followed suit when the federal government (Office of Education) established vocational service areas for the administration of funding provided by vocational education legislation. The areas established were Agriculture, Distributive Education, Health Occupation Education, Home Economic Education, Office Occupations, Technical Education, and Trade and Industrial Occupations. This structure also filtered down to the local level.

Vocational education slowly developed a sophisticated curriculum including simulation shops, laboratories, work-study programs, and project completion programs. Success was determined by counting the number of participants in a given program. Vocational planning did not take the outside world into account. The main thrust of planning was to develop methods and techniques to improve the basic instructional programs in the occupational areas.

The passage of the Vocational Education Act of 1963 introduced a distinct change in vocational programs. This act modified vocational education to include student needs and community employment needs in addition to providing for occupational skill development.

The effect of this act was to cause vocational planners to look outward as well as inward. Programs were created to respond to local needs. This allowed vocational education much more flexibility. It provided funds for almost any program that a planner could show a need for, unless the program crossed into the realm of post-secondary institutions.

The Act of 1963 provided funding for the following purposes: 1) vocational education for persons attending high school, 2) vocational education for persons who have completed or left high school and who are able to pursue full-time study prior to entering into the labor force, 3) vocational education for persons who have entered the labor force and need training or retraining to retain or advance in their employment status, 4) vocational education for persons who have academic, socio-economic, or other handicaps that prevent them from succeeding in the regular vocational program, 5) construction of area vocational education facilities, and 6) auxiliary services and activities to assure quality in all vocational education programs. These included auxiliary items such as teacher training, vocational evaluation, supervision, experimental programs, state administration and manpower planning.

The 1963 act also greatly increased the federal participation in vocational finance. Federal dollars have comprised an ever larger share of the vocational education finance picture, especially since 1963. Paralleling this increased participation has been a greater demand for accountability and planning. Federal legislation did not mandate any comprehensive planning, but did require basic program information thus laying the foundation for more detailed planning and information reporting systems.

The Vocational Education Amendments of 1968 broadened the scope of vocational education even more. This legislation included program funding for the disadvantaged, handicapped, adults, and all others expressing a need for vocational education. The act allowed funds to be used in preparation for employment, instruction necessary to prepare students for successful completion of a vocational program and for instruction that assists individuals in making an informed and meaningful occupational choice. The amendments also directed states to evaluate programs in light of information available on current and projected manpower needs and job opportunities.

The act further stated that all applications for funding must include assurances of adequate planning to meet vocational education needs of potential students in the area or community which is being served. Applications must also contain a provision for manpower planning at the local level.

The 1976 amendments to the Vocational Education Act have added a more specific planning emphasis to vocational education. At the state level, both one-year and five-year plans are now required. At the local level all local vocational education agencies are required to have advisory boards representing community interests, and to ensure that vocational courses are responsive to community needs and the local labor market.

The table on the following page lists major legislation that has brought about federal involvement in the funding and development of vocational education.

Program Planning, Budgeting and Evaluation

As educational administrators and school boards have been pressed for increased accountability in educational programs and objectives, many have found that the traditional line-item budget does not supply sufficient information to provide cost data for specific programs. This situation is paralleled in most other governmental agencies. In response to the demand for an alternative method of budgeting, the concept of Program Budgeting has been developed to meet the need for increased information at the program level.

The basic concept of program budgeting is to make as explicit as possible the costs and consequences of resource allocations. The technique was first introduced into the Defense Department in 1961 under the name Program Planning and Budgeting System (PPBS) and rapidly spread to over 20 other federal departments. While many claims by its

TABLE OF VOCATIONAL EDUCATION LEGISLATION

Year	Legislation	Content
1917	Smith-Hughes Act	First act providing federal funding for vocational education.
1929	George-Reed Act	Promoted further development of agriculture, home economics, and trades and industry
1934	George-Ellzey Act	Extended the George-Reed Act
1936	George-Deen Act	Included funding for distributive education.
1940	Defense Training Act	Provided for education related to national defense industries.
1946	George-Barden Act	Amended and replaced the George-Deen Act legalizing the use of funds for occupational information and guidance.
1956	Health Amendments Act	Authorized appropriations for practical nursing training.
1958	National Defense Education Act	Provided funding for programs for highly skilled technician training to meet defense needs.
1962	Manpower Development and Training Act	Provided funds for the training and retraining of unemployed or underemployed individuals.
1963	Vocational Education Act	Increased the scope of vocational education. Programs tailored to people rather than a select number of fields.
1968	Vocational Education Amendment	Provided funding for almost any program where a need was indicated.
1976	Vocational Education Amendments	Added planning requirements for federally-funded vocational programs; strengthened emphasis on training for the disadvantaged.

supporters have overstated its usefulness and impact on management, it nevertheless represents an important advance in accounting and management technique.

The heart of program budgeting is that, in the normal course of accounting procedures, costs are allocated to programs, activities or functional units rather than administrative or organizational units. This makes it possible to compare the cost of operating a program to measures of the program's output or performance. In the case of vocational education, this could include cost per student per course, cost per graduating student, or cost per placement; many other output measures might also be used. Program budgeting is also characterized by a multi-year approach to operational planning and budgeting. That is, anticipated expenditures, or expenditures required to operate given programs at given levels are mapped out a number of years in advance; the current trend is toward five-year planning steps. As the planning year comes closer to the present, the expenditure projections are refined and brought into accord with actual budgeted expenditures.

Thus, a concept essential to program planning is that of program costing. This is "simply" the assignment of all costs to programs designed to meet an objective. Simple, that is, until one actually tries it! Program costing is not a planning process in itself, but a tool that may be used for either program planning or evaluation. In terms of development, districts or local education agencies have usually begun program costing for existing programs first, then developed program evaluation using program costing, then finally established techniques for program planning. Each step involves increased financial sophistication and further commitment of professional resources to planning and evaluation.

Program planning is the much broader process of establishing goals and objectives, creating alternatives to meet the objectives, budgeting the alternatives and selecting and implementing alternatives, then evaluating the results according to the original objectives. Program budgeting is designed to answer the question, "how much does it really cost to do things this way?" This may then be weighed against possible alternatives. But program budgeting does not answer the question of whether "this" was really the best way to accomplish a goal, or whether the goal itself was a proper one. That is the function of program planning.

A newer concept related to program budgeting is that of "zero-base budgeting." This technique is currently being introduced at the federal level and should make its appearance at the state and local levels shortly. In this concept, each agency, program or function starts off the accounting period with a "zero" budget; that is, the agency or function must justify and plan for all its activities, not just added increments. This has the advantage of much closer accountability, especially where program goals and objectives are well defined. A disadvantage is that it requires a much greater commitment of resources to budget planning than most agencies are currently prepared for. It also requires a high degree of goal definition and sophistication in cost allocation.

Implementing Program Budgeting

"Trying to apply PPBS to the earthy reality of local schools is a bit like trying to change a flat tire on a moving car."
(Hartley, 1972)

The above quotation seems to accurately express the attitudes and feelings of many administrators toward the change to program budgeting. The switch involves many cherished attitudes toward organizational structure as well as accountability itself. Attempts to jump from a line-item budget to a full-blown program planning system may result in little short of chaos. Intermediate steps are needed, therefore, to introduce program budgeting and planning at a rate that the agency can absorb and still maintain normal operations.

The following section lays out the steps, roughly in chronological order, that are needed to provide a sound and workable basis for program budgeting. Many agencies have successfully introduced the concept by first applying program budgeting to one or two well-defined "pilot" programs, then expanding the technique as expertise and resources grow. Since in most areas vocational programs are already well-defined and require by-program cost accounting for state or federal requirem[illegible], vocational programs should prove a good opportunity from which to expand program budgeting and planning to entire school systems. The basic outline of the process of implementing program budgeting is:

1) identify the program structures; 2) designate accounts for programs; and 3) allocate costs to those accounts.

Steps to Implement Program Budgeting

The first step is identify the program structure. In terms of vocational education, this will usually be in the form of courses or sequence of courses, such as welding. For general programs, this is likely to be a combination of grade and subject matter, such as 12th grade English. A key requirement of program structure for program budgeting is that it is possible to relate the program to an objective or set of objectives. This is a matter of setting uniform skill requirements at program termination, or measurement of placements and opportunities for program graduates. In the course of program evaluation, choosing functional program elements or titles will lend credibility and usefulness to measures of program effectiveness. Additionally, for a public agency such as the school system it is very desirable that program titles be readily understood. For example, the meaning of welding program is easily recognized despite local variations in program content.

The term program is sometimes a confusing one and must be carefully defined. For our purposes, a program is something that students are enrolled in and complete. This separates a function such as welding, which is a program, from separate services such as guidance and counseling which are functions but not programs.

Developing the Accounting System

The next step is to develop a program accounting system that coincides with the program structure. Initially and perhaps for some years to come, the program budget may have to be translated into a line-item budget for legal reporting purposes. This requires an accounting structure that accommodates the two budget systems.

The following is an account structure that allows for the allocation of costs by program and location:

Object Function Location Program Sub-program

The basic format for this structure is drawn from Handbook II, federal guidelines for vocational reporting. In this system, the first three categories (object, function, and location) are standardized categories, while the last two (program and sub-program) are left to the local agency's discretion. In federal terminology location is referred to as "operating unit" and sub-program as "special cost center."

Below is an example of how the account might appear for a typical expenditure entry. This is an accounting of instructional cost (regular salary) for a specific vocational program, the account number for which is 110-1132-751-112-01.

Object	Function	Location	Program	Sub-program
100 Salaries				
110 Regular Salary				
	1000 Instruction			
	1100 Regular Program			
	1130 High School			
	1132 Secondary Vocational Education			
		700 High School		
		750 Secondary Vocation-Technical School		
			100 Vocational Ed.	
			112 Vocational Education 12th Grade	
				01 Small Engine repair

In this case, the numbers for these categories -- object, function and location -- would be common to all districts using this system, while program and sub-program are optional categories where states or local districts have created their own codes. For example, the sub-program code might be matched to the federal vocational program code number. This would provide a standard definition for sub-programs in vocational education.

It should be noted at this point that not all states have adopted this precise format. Several states, including Michigan and New York, have recommended systems with the revised order: function, object, program, sub-program, location. This provides the same information but through a different sequence of allocating costs to sub-program and location.

An advantage of this coding system is that it is not at all unique to vocational education programs; it may be used for any set of programs which the local education agency can identify. For example, programs such as reading, physics or social studies can be specified as sub-programs, and a category for this might appear as:

Object	Function	Location	Program	Sub-program
110	1130	701	012	15

which would indicate a 12th grade social studies course, taught at the main (or only) high school building. Sub-program in this case is used to designate a defined course of instruction in conjunction with a grade level. This facilitates the use of the same accounting system throughout the school system.

A special problem may occur with area skill or vocational centers which do not have grade levels on a K-12 scale. Where this occurs, the last two digits of the program category may be better used to designate either a sequence or a skill level. This might be a simple breakdown into first and second year or more detailed skill sequences may be used. The prime concern is that the breakdown be logical and designed to serve the needs of the system.

So far, no provision has been made in this accounting structure for other than general funds. Since for vocational purposes (as well as compensatory education or other special categories) specific fund categories will probably be needed, these funds can be given designators and added to the coding structure. Coding for funds is not currently standardized. A typical code might be as follows:

A -- General Fund
B -- (special fund 1)
C -- (special fund 2)

The most common location for The Fund code is preceding the Function code:

Fund	Object	Function	Location	Program	Sub-program
A	110	1130	701	112	01

Thus the account A-110-1132-751-112-01 represents the same expenditure as the first example, drawn from the general fund.

Allocating Costs Among Functions or Programs

Once the program account structure is established, specific costs must be allocated among the functions or programs. To do this the local agency must separate costs according to type and create a basis for allocating each cost.

Costs may be divided into direct and indirect costs. Direct costs are those which are directly assignable to a program's operation. Examples of direct costs are:

teaching salaries
teaching supplies
equipment

While direct costs are easier to deal with, they still must be allocated by program. In some cases the entire cost of an item may be allocated to one program. The cost may then simply be entered as a charge against the program in the account structure.

Many direct costs will need to be allocated among programs. A common example of this is a staff member teaching in more than one program. In this case the basis for allocation is fairly simple: An instructor who spends two-fifths of the time teaching welding and three-fifths time teaching tool and die making would be "costed" to each program by those proportions.

A major goal is to allocate as many costs as possible to programs directly as they occur. The proportion of costs which can be allocated in this manner usually increases with the size of the system and the sophistication of the accounting system.

Indirect costs are those generally thought of as "overhead". An increase in program size will not increase overhead costs in direct proportion. Common examples of indirect costs include:

property insurance
utilities

Indirect costs are generally more difficult to allocate to programs. Accurate allocation requires that: (1) a relevant basis for allocation be used consistently, and (2) that the basis can be accurately and effectively converted to a unit of measurement. To illustrate:

Property insurance is a cost that is incurred by operating a structure or building. Therefore the basis for allocating utilities to a program would be space. This can be converted into a square foot measure of the space occupied by the program. The measure should further take into account the time, or the proportion of the day that the program uses a space. The time and space in this example are combined to develop the proportion of total property insurance that is allocated to a given program.

Supporting services form a special category in that they are often considered separate functional units but are not in themselves programs. A good example of this is counseling. This is a separate function and is often identified separately in budgets. However, its actual function is to provide support to students enrolled in programs and its cost must be considered a cost of maintaining students to programs. In this case the cost of counseling would be allocated to programs the students are enrolled in.

The logic may be seen more clearly with other administrative services. The payroll or business office enables programs to operate. Payroll services support staff and would be allocated to programs on a staff basis. Business services are more general in nature and might be allocated simply as the budgeted level of purchased products or services; this in turn requires information from purchasing and service order or budget allocations.

This is not to say that separate budgets should not be drawn up for these functions. Clearly, separate budgets for these are needed both to develop program budgets and for internal cost comparisons. But this represents an intermediate rather than a final step in the program budgeting process.

What happens to department budgets when program budgeting is implemented? A common fear of department heads is that program budgeting "increases" the department's costs since the program budget will reflect cost items, especially overhead, which were previously not allocated to the department. The basic counter to this argument is that program budgeting only reflects decisions which have already been made. The process of allocating costs to functions or programs does not create costs which were not incurred and accounted for before. The real cost of offering a program may be higher than the previous "apparent" cost but, as costs are allocated, the department or program's budget also "increases" to reflect expenditures allocated to the department. Resistance to program budgeting may be decreased when administrators and faculty understand that program budgeting does not "increase" their costs, but provides better information about costs which are already incurred.

In recent years a concept of "added costs" was developed to identify the unusually high costs of certain types of programs. The state or federal government then provides partial reimbursement for operating those programs. The concept stems from the philosophy that the local district should be responsible for the usual costs of educating students in the general education program. Categorical funding or reimbursement should cover the unusual costs of certain programs. For example, there is greater reimbursement for a high-cost program such as auto-body repair than for a lower-cost program such as general merchandising. The "added cost" concept requires the establishment of both regular (general program) costs per student and the costs unique to the program. Although procedures vary from state to state, an "added costs" amount is usually computed for each vocational course based on the average of such courses within the state.

Conclusion

Increasing public participation and the need to consider alternatives within and between educational programs are creating new demands for program information. Program budgeting and planning are useful tools for providing this information, but at a price: they require an increased commitment in resources and expertise. However, the resources needed are within the reach of most local education agencies.

Vocational education, because of its program reporting requirements and program orientation, presents a unique opportunity for introducing program budgeting concepts to the school system. Many aspects of program budgeting are already used for vocational programs, and the expansion of these to general educational programs increases the potential for improved performance and the accuracy of budgeting for vocational programs at little increase in cost.

The base concept for program planning, that of cost allocation, requires the greatest effort from the district. Costing procedures must be developed which accurately reflect the real costs of offering programs and must do so within the constraints of available technology and resources. As with any administrative function, the accounting system should not cost more than it is worth to its users.

Program planning is far more than costing out programs; for planning to be effective it must actively involve the administrative and instructional staff. Program planning may be an effective tool for managers, but in reality it is much more than that; it is the basis for the creation and selection of alternatives for action.

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VIII

SCHOOL-BASED PLACEMENT: "AN UNTAPPED SOURCE OF MANPOWER DATA FOR VOCATIONAL PLANNING

INTRODUCTION

A major problem hampering vocational education planning on the local level is the lack of accurate manpower demand information. Planners have had to rely on labor market information developed at national and state levels with an admitted loss of reliability when applied to smaller population bases. One important, but often overlooked source of information on local demand for labor is the school-based placement program.

This chapter first explores the past history and functions of school-based placement programs and discusses the fast growth of placement programs in recent years, including passage of legislation in several states which makes placement programs a mandatory function of the secondary school. Next the chapter defines the scope of the placement program and lists its numerous functions, purposes, and attributes that can aid the vocational planner. These uses range from accurate and empirical projections of local labor-market demand to student feedback on curriculum content to a sensitive reading of employer skill needs.

Planning and Placement

Vocational education has recently been taken to task for its apparent inability to adequately plan for the future. The 1974 General Accounting Office Report on Vocational Education highlighted the need for improved vocational planning. It also recommended that schools be required to take responsibility for job placement and follow-up in federally supported vocational programs. The need for vocational planning and the emerging development of school-based placement programs are mutually supportive.

According to Dean Griffin, Associate Director of the American Vocational Association: "The single most important concept to strengthen vocational education at this time (November 1975) may be that of improved comprehensive state and local planning." (Griffing, 1975) The need for comprehensive vocational planning is most apparent at the secondary education level where total enrollment is declining and support for educational funding is becoming more difficult.

While funding is important and good planning increases the likelihood of financial support, there is a more fundamental reason to improve vocational planning. Too many young people are ill-prepared to meet the demands of a constantly changing job market. The net result is disillusionment, frustration and a very unhealthy social situation. Paradoxically, the unemployment rate for young people continues to soar while many jobs go unfilled because of a lack of qualified applicants. Hopefully, educational planners will be able to rectify these differences and vocational planning at the local level will soon become a reality.

Presently, vocational planning at the local level varies from nonexistent at worst to haphazard at best. While there are some notable exceptions, local schools do not seem to be able to cope with the problems involved in long-range vocational planning. Even though the federal government requires states to submit approved vocational plans and the states are in turn requiring schools to show evidence of a planning process, vocational planning at the local level still tends to be less than adequate. For the most part vocational planning at the local level follows the availability of federal and state funding. While willing to submit vocational plans, local schools are often unable to make curriculum changes because of commitments made to staff and facilities.

Another problem which hampers vocational planning is related to the fact that local schools are unable to reconcile the difference between planning based on student interest and planning based on manpower demand. A primary reason for this dilemma is the lack of accurate manpower demand data at the local level. Planners have had to rely on information developed at national and state levels with an admitted lack of reliability when applied to population bases of less than 250,000. (Occupational Outlook, 1975).

Another reason why national and state labor market information is of limited value at the local level is the fact that young job seekers are relatively immobile. High school follow-up studies in Michigan showed that 91% of the students who enter the labor force immediately after leaving high school find jobs within a 30-mile radius of their homes. (Michigan Follow-up). Due to the limited mobility of young job seekers and the need for accurate employment information on the local level to influence student decision making, it is essential that a system for gathering local manpower demand data be concerned with entry level occupations. An important, but often overlooked source of local manpower data are school-based placement programs. This chapter will address the problem of gathering reliable local manpower data and recommend a system of school-based placement programs as a solution to the problem.

School-Based Placement

Evidence of school-based placement can be found as early as 1904 in the Brooklyn Boys School and in 1914 in the Boston Placement Bureau. (Brewer, 1942). What was to become the prototype for today's comprehensive school placement programs was established in the Baltimore Public Schools in 1928.

While school-based placement had its origins in large city schools, only recently has it begun to gather momentum elsewhere. Support for school-based placement was found in Title I of the 1968 Vocational Education Amendments where Congress called for a reduction in the hign rate of youth unemployment by providing placement services through vocational programs. Additional support for school-based placement came in 1970 from the National Advisory Council on Vocational Education which stated that every school should be an employment agency. The Sixth Report of the National Advisory Council on Vocational Education (1972) Counseling and Guidance: A Call for Change, recommended that job placement services be considered as a major function of school guidance programs.

Evidence of the broad base of support for school-based placement came from the business community in 1973 at the first National Conference on Career Education. It was proposed that, "every high school and post-educational institution build, in cooperation with the business-labor-industry community, an aggressive job development and job placement program." (Career Education, 1973).

Sidney Marland, former United States Commissioner of Education supported the concept of school-based placement and identified it with career education when he wrote that, "placement services in the school system will assist every student, especially the student who leaves before he completes the twelfth grade, to plan the next step in his development. Job entrance will be just as important as college entrance to counselors and teachers." (Career Education, 1972).

School-based placement programs, while not new to the educational scene have in recent years seen considerable growth and development. In 1973, the State of Florida passed legislation requiring public schools to provide placement services to all students graduating or leaving school. The State of Virginia followed soon after with similar legislation. Results of a 1975 survey of state directors of vocational education showed that out of 40 states responding, only five states either had placement legislation or had legislation pending. (Carkhuff, 1975). On the same survey, however, in response to the question: "The responsibility for placing all graduates of vocational programs rests with the school," only eight of the 40 respondents disagreed.

It would appear that the concept of school-based placement is taking hold. Within a few years a network of school-based placement programs will likely exist. In anticipation of that eventuality, the remainder of this chapter will be devoted to describing school-based placement and suggesting ideas for utilizing placement programs to gather local manpower data to assist in vocational planning.

School-Based Placement Defined

Placement services as defined by the State of Florida include: "Services to school graduates and leavers depending upon the desire of the individual to obtain gainful employment, to continue education, or to engage in a combination of employment and further education." A definition for school-based placement found in the Michigan Placement Guide states: "School-based placement services cover the entire range of assistance offered by a school to help the student develop and implement his or her career plan." Placement as viewed by the Michigan publication is a service provided by schools to help students reach career goals.

The idea that placement is a part of career education is not unique to Michigan. A national group formed within the American Vocational Association to promote school-based placement stated that it viewed placement as the accountability compoment for the total career education process. The group further stated that placement is a means of acquiring educational accountability as well as a way of gathering data for curriculum evaluation and design. (Wasil, 1976).

In the broadest sense, placement in everything that a school system does in order to help young people in the next step in their educational and work lives. Translated into specific functions, placement includes the following:

- .Job Search and Development
- .Job Orientation and Preparation
- .Career Awareness and Exploration
- .Career Planning and Decision Making
- .Pre-Employment Preparation
- .Part Time and Co-Op Work Experience
- .Job Referral and Placement
- .Educational Referral and Placement
- .Source of Local Labor Market Information
- .Follow-up and Evaluation
- .Vocational Planning and Curriculum Modification

School-Based Placement Services

Placement services in their most comprehensive form are directed towards the needs of four groups:

- .Students
- .School
- .Community
- .Employers

Recognizing that a placement program will only be as good as the students it places, a good placement program should insure that students are adequately prepared for the world of work. Services available to students should include the following:

.Job Demand Information for Career Planning

.Employability Skills for Successful Job Acquisition and Retention

.Part Time and Voluntary Work Experience Prior to Graduation

.Counseling Assistance to Identify Career Alternatives and Develop Career Plans

.Job and Educational Referral

.Job Maintenance and Supportive Counseling

.Follow-up and Feedback

Placement services to the school system should center on the follow-up and feedback received from students, employers, and training institutions. Information provided to the school should be especially useful for curriculum revision and long-range vocational planning. The results of follow-up studies with programmatic breakdowns should be made available to counselors, teachers and students. Local labor market information should be accessible for purposes of career planning and decision making.

The community also benefits from school placement services. No community could exist if its most precious resource, young people, were squandered and misused. Unproductive youth become a drain on a community through rising crime rates, increased welfare costs and a dropout-prone attitude fostered by a society that seems not to care. It should be obvious to any community that young people require an advocacy system such as school-based placement in order to effectively enter the world of work.

The benefits of school-based placement to employers should be obvious. A steady supply of trained manpower equipped with the skills needed by the job market, and paid for by the taxpayer, is a bargain no employer should pass up. A school system in constant contact with its employers will be better able to adequately meet the skill needs of the future. Certainly, a partnership between the schools and the employment community would be mutually beneficial.

School-based placement, because of its unique relationship with both the schools, who are the manpower trainers, and employers, who are consumers of labor, is in an ideal position to provide the data base essential for vocational planning. The remainder of this paper will outline functions which school-placement can perform to facilitate the vocational planning process.

School-Based Placement as a Source of Manpower Data

The literature concerning school-based placement is replete with references to the need for placement programs to be concerned with accountability, follow-up and the acquisition of manpower data. There is general agreement that follow-up and accountability are placement functions and that placement has a responsibility for providing both a measure of vocational program success and feedback to the curriculum for the purpose of update and revision.

Although the literature is explicit in calling for placement programs to be concerned with influencing vocational planning and curriculum modification, it is empty of program models. One exception is the

Santa Clara County System for the Collection and Use of Vocational Program Information. The Santa Clara System relies on a combination of locally generated data and information provided by the State Employment Development Department. The Santa Clara System limits its data collection to 150 key occupations. The system is based on a measure of local supply and demand. Data supplied by the state measures net demand from industrial growth, replacement needs from death and retirements, and projected number of job openings for a specific time period. Santa Clara, for its part, identified all formal vocational training programs in the local area, including both public and private schools, to determine supply by occupation and year of completion. The primary purpose of the Santa Clara System is to determine the net supply and demand by occupation for the local geographic area and attempt to reconcile training imbalance problems. According to the authors, "Quantitative vocational planning based on manpower demands, program supply, community needs, and informed student interest is now a reality in Santa Clara County. (Ohanneson, 1975).

The Santa Clara study points out one method for developing a labor-market information system to aid local schools in vocational planning. Very few school placement programs have developed to the extent that field-tested methods for gathering local manpower data have been published. The placement literature is, however, full of innovations, recommendations and untried methods for collecting local manpower data.

What follows is a collection of generalized placement concepts concerning the development of local, placement-directed, vocational planning resources:

1. Student follow-up studies conducted on a one, three and five-year basis for the purpose of determining employment and/or educational status of graduates and program leavers.
2. Employer follow-up to determine the extent of satisfaction with student preparation and training content.
3. Employer surveys to determine future manpower demand.
4. Student surveys to determine future student interest.
5. Enrollment projections to determine future manpower supply.
6. Community surveys to determine future needs and resources.
7. Employer contacts to determine changing technology and the need for curriculum revision.
8. Advisory committee review and program evaluation.
9. Self assessment and program evaluations.

The management of school-based placement programs will allow for various forms of manpower data to be collected which will aid in the vocational planning process. The following are examples of useful types of manpower information:

1. Demographic characteristics of student applicants.
2. Demographic characteristics of area employers.
3. Employer hiring patterns.
4. Job demand information by occupational categories.
5. Entry-level employment requirements and wage levels by occupation.
6. Total labor force statistics by occupation.
7. Labor union entry requirements and practices.
8. Occupational licensing requirements.
9. Lists of current and seasonal employment opportunities.

10. Apprenticeship and other employer training programs and their entry requirements and starting dates.
11. Vocational Training Resources in both the public and private sector.
12. Employer recruiting practices.
13. Community service agencies providing job assistance.
14. Student dropout rates.
15. Student commuting patterns.
16. Employers who hire special students with various handicaps.
17. Employers willing to serve as vocational advisory members.
18. Various employer resources such as field trips and other vocational services.

The foregoing list is an example of the types of manpower data that local school placement programs will have access to for the purpose of vocational planning.

Summary

Most schools have not bothered to gather manpower data in the past because they felt little responsibility for students once they left school. With the federal emphasis on vocational planning and accountability, however, local schools can be expected in the future to become more involved in the planning process. With the need for reliable manpower data, a necessity for both student information and vocational planning, local schools will have to develop management systems to gather the required data. The recent growth of school-based placement makes it a logical candidate for assuming the responsibility for developing local manpower data retrieval systems to aid in the vocational planning process.

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IX

VOCATIONAL EDUCATION AND OTHER PLANNING SYSTEMS

Introduction

An essential ingredient in planning for vocational education is a notion of what lies in the future not only for education and the job market but in other aspects of the community as well. Indeed, an adequate understanding of local opportunities for employment requires that all factors affecting growth and change within the community be explored to some extent. Many planning and information systems have been created to analyze and plan for various components of community development; these include social programs, physical development plans and economic forecasts and projections. All of these will have an impact on the world of work and ultimately upon local vocational programs.

The purpose of this chapter is to identify these systems, explain their use and relevance to vocational education planning and to give some suggestions as to where they may be better used to improve the planning process. This will include not only agencies with a planning function but other related agencies whose activities immediately impact on vocational education programs. The hope is that by expanding the vocational education planner's scope to include these agencies, the result will be increased information and a more rational base from which to plan.

Planning and Community Development

Community development is a concept used by planners to embrace the set of values, goals and finally programs which together define the structure and substance of the community. This includes such disparate elements as the location of industrial and commercial centers, social programs to combat specific problems, cultural activities to enrich the life of the community and selection and placement of government structures.

Education plays a dominant role in determining and defining the character of the community. In many areas, the schools represent the community's largest single public investment; the local school system's budget may equal or surpass that of the local government. In real terms, these resources represent a myriad of programs that affect the community for years to come. While it is today fairly common for local planners and the school system to coordinate the physical placement of school structures in the community, many other necessary types of coordination and cooperative planning are ignored or even resisted. Although there are many reasons for this, some common elements point to differences in emphasis and past methods that have separated the different branches of planning and governmental action.

The following sections will outline the central values and goals common to community development processes and the structure within which it takes place. This is intended to delineate those areas where vocational education planners and administrators have common interests with other community planners and suggest ways in which cooperation might take place.

One of the most highly valued yet most elusive values of community development is community diversity. While this is most frequently expressed in economic terms, the concept has many implications. A widened economic base provides better opportunities for advancement and enrichment, a means of attracting and retaining talented and diverse individuals and a greater resistance to the cyclic effects of many industries. This economic stability and well-being in turn provides the base for attracting a more diverse population, providing more cultural and social amenities and a greater variety of lifestyle situations.

One priceless asset a community can possess is the ability to retain its residents across the years. Although the benefits of labor force mobility are widely touted by economists and policy analysts, they too often fail to mention the high price paid by the community and the individual for those benefits. In a society where the average family moves every five years, the strain on social and personal relationships places a burden, creating many serious problems for the family, neighborhood and community. Many of the programs designed to alleviate social problems too often ignore this facet of community life.

The concepts of stability and diversity represent the major values in community development efforts. The third major value is that of growth. In the vast majority of communities, this takes the form of quantitative growth in terms of population, jobs and physical assets.

To this end most communities have a physical development plan which sets forth the quantitative goals and anticipations of the community's planners. Often information of this type will be contained in the comprehensive plan, rather than set forth in a separate document. But whichever form the plan takes, this is the planners' view of the future.

Diversity,stability and growth, then, are the major elements underpinning most community planning efforts. What specific directions are pursued under these goals will have an enormous impact on vocational education programs. Vocational education in turn affects some of the most vital inputs into the physical and economic development processes. The development plan, especially one which clearly delineates developments intended for the next five years, can provide the vocational program planner with advanced knowledge of what programs may be in demand for particular projects, what types of industries and trades are likely candidates for the community and some idea of the pace of development.

A detailed examination of development plans in conjunction with other data may also provide some insight into the future character of the community. This may include not only the number of children of families with relation to the size of the community (a new industry might attract large numbers of single workers), but factors such as likely educational backgrounds and ethnic mix. These may lead to new ideas in program development to help the vocational program planner in dealing with and anticipating particular problems that may arise as the nature of population and employment change.

From the planner's view, an active and flexible vocational education program is a major asset in attracting new industries and trades to the community. Very often, a potential employer's labor problems may be reduced by the existence of training programs in needed occupations. By making early contact with such potential employers, the cost of the vocational education program may also be reduced by the acquisition of cooperative onsite training. This type of activity clearly illustrates the need for close and continuous cooperation between development and vocational education planners.

The Community Planning Structure

Planning for community development takes place within a wide variety of structures. These are to some extent separated by function, but there is a great degree of variety and overlap in the various organizations. Planning systems and organizations are generally divided into physical, economic, and social or human service agencies. In some areas, there are also local or regional planning agencies which seek to coordinate these separate functions. An important factor affecting the operations of each of these organizations is that each receives its mandate for action and goal orientation from a slightly different constituency and each will respond to outside influences in different ways.

The Physical Planning Structure

Most physical planning takes place at the local or municipal level. This includes the establishment of local zoning and subdivision regulations as well as some commercial development regulation. The most common form is for the locality to draw up a "comprehensive" plan which is comprehensive in the sense that it includes the entire area of the community and affects all physical determinants of the community. The plan and its inputs include most basic physical and demographic components, usually with a projection of population and physical development for at least 10 years.

Comprehensive plans vary widely in their usefulness, accuracy and applicability. Unless the plans are frequently updated, they will be of little use for estimating the types of jobs likely to be attracted to the community or special skills likely to be of interest. However, more current information on development activity will be found in working papers and other informal documents from the local planning department. It should be noted that except in the case of major cities, the area considered by the local planning department will usually be smaller than the relevant job market.

The local planning department is directly responsible to local government and will often reflect local political goals and values. They will be most closely tied to local physical development decisions and will be less influenced by regional or state activity. Thus, outside the school system the local planning department may be the most accurate reflection of local preference for future development.

Aside from physical development information, the local planning department will often have many forms of economic information necessary for an undertaking of physical development programs. Studies relating to capital improvements, job surveys and breakdowns of current job specialities and skills are examples of the types of information the planning department gathers and retains. Some of this may include future projections and should not be overlooked as a source of both information on possible job demand or possible sources of training facilities.

In some areas, specific activities such as transportation or even general purpose planning will be carried out by regional agencies. These may range from cooperative groups of one or two municipalities to multi-county or multi-state agencies. By including a larger planning area, these agencies are often able to provide a better data base and more sophisticated analysis techniques in such areas as labor-market projections, industrial activity and transportation projections. However, except in cases where both the local education agency and the planning agency are county units, it is unlikely that the planning areas of both will be co-terminous. In this situation some way must be used to rationalize data from different data sources. A typical example of this is that labor-market areas are county or multi-county areas, while districts are often only a small portion of that area. Thus the district must either extend its own placement and labor market information to include the larger area (including the activities of other education agencies) or factor the labor market data to include only its own area.

Economic Planning and Information

The major function associated with economic planning at the present is information collection along with some degree of coordination. This is carried out through a mix of local, regional, state, and national agencies. Traditionally, economic goals have been split between agencies; economic development has long been separated from employment policy. One result has been that employment policy has in many cases been lumped with human and social service agencies resulting in little coordination with economic development activities.

Especially in cases where information "filters down" from national levels and agencies, the region is an important concept. Often a regional planning agency will bridge the gap between very sparse information at the local level and detailed but less relevant national data. This is true of most projected data; the regional level is often needed to assure an adequate statistical base for establishing meaningful trends.

Most regions vary in size according to the particular use for which they are designed. They range from multi-county regions of state employment and economic agencies to larger multi-state regions set up by the Federal Reserve and Departments of Labor and Commerce. The larger regions may seem to offer less relevant information to the local planner, but they will provide significantly better information than national estimates for such factors as business investment, housing starts or interest rates.

Since at the present the greatest benefit stemming from economic planning is in the provision of information and projections of future economic activity, the vocational education planner should concentrate on developing sources from each level that will complement information from other levels and agencies.

In discussing economic activity in this section, the intent is not to make the vocational education planner a substitute for the regional economist. Exposure to some of the primary factors and sources of information will, however, provide assistance in assessing the strengths and weaknesses of economic projections, developing better local sources of information. The aim is to provide the planner with the best possible tools to make realistic program projections.

Where occupational projections are available, questions concerning the reliability and usefulness of the data come to mind: what area does this projection include? What demand and supply factors were taken into account? Does this include the entire occupation, or only entry-level positions? What factors are likely to cause this projection to change? If occupational projections are to prove useful in anticipating program levels, then the planner must be able to evaluate information used for projections.

Planning in Human Service Agencies

The terms "human service" and "social welfare" embrace a number of agencies and programs which have both a direct impact on the unemployment situation and on the opportunities available to potential vocational education students. Many of these agencies are directly concerned with job training, while others are more concerned with providing complementary services to the unemployed and underemployed to enable them to begin or continue training in a vocation with employment potential.

Educators have long recognized that social and family problems are one of the greatest causes of dropouts and reduced performance in training programs. Often, these same types of problems prevent potential students from enrolling even where programs are available. If vocational programs are to cater effectively to this population, part of the program planning must be the provision and coordination of services to enable the disadvantaged to pursue vocational training.

As most observers are aware, the overall structure of social welfare is an exceedingly complex and often conflicting layer of bureaucracies and programs extending from the local to the federal level. Although this must ultimately be coordinated with employment and training programs, this is clearly not the task of the local planner. However, many activities at the local level can be linked to local vocational education programs.

A common and useful type of social planning is that of social welfare planning carried out by councils of health and social work agencies. Many of these councils act either on behalf of their constituent agencies or as consultants to planning and anti-poverty groups. One overriding goal is the elimination of overlap or duplication of effort and the identification of groups with special problems that cannot be handled through existing programs.

While these councils have limited impact related to allocation of funds or programs, they may assist the vocational education planner in identifying needs of potential students that are essential for success in completing programs and pointing out where resources exist but are not fully utilized.

Recently, the use of such councils has been strengthened by the mandate for coordination included within the Comprehensive Employment and Training Act of 1973 (CETA). This in effect establishes a specific structure for coordination of manpower-related activities in most metropolitan areas. However, outside of those areas many smaller communities can obtain substantial benefits from coordinating with local social service agencies outside the CETA structure. This is especially true where ancillary or complementary activities such as family support or day care are required by trainees.

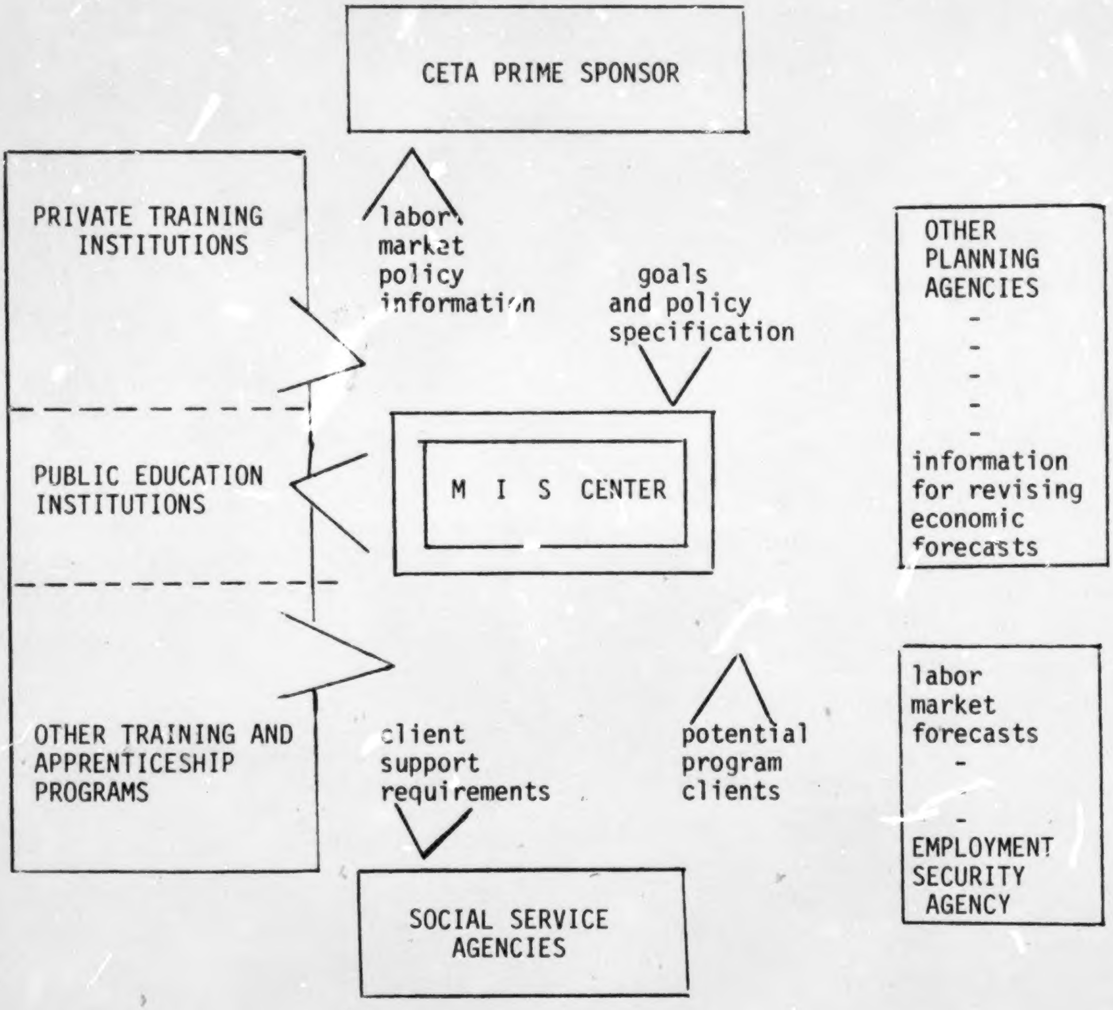
Areas of Possible Cooperation With Other Local Planning Systems

Most local planning agencies have something to offer for vocational education planning, and most will have at least some interests in local school plans. Basically, these interests fall into areas of data sharing, overlapping programs, facilities planning and capital budgeting. Cooperation in these areas can result not only in lower operating cost but in more effective programs in problem areas (such as high unemployment and retraining programs) and less duplication of specialized facilities and services. This does not imply further centralization, but a continuing cooperative effort between existing local agencies.

Data Sharing and Local Sources of Data

One of the most fruitful areas of cooperation is in the creation of shared data sources for local labor market and related information. At present, no single agency is tasked with the provision of local labor-market information in most states. Where such information exists, the form is not likely to be readily usable for vocational educational planning.

Figure 1 FUNCTIONS RELATED TO THE MANAGEMENT INFORMATION SYSTEM (MIS)


CETA PRIME SPONSOR
PRIVATE TRAINING INSTITUTIONS
labor market policy information
goals and policy specification
OTHER PLANNING AGENCIES
PUBLIC EDUCATION INSTITUTIONS
M I S CENTER
information for revising economic forecasts
OTHER TRAINING AND APPRENTICESHIP PROGRAMS
client support requirements
potential program clients
labor market forecasts
EMPLOYMENT SECURITY AGENCY
SOCIAL SERVICE AGENCIES

This had led to ineffective use of vocational education programs and the duplication of training programs by CETA sponsors and other manpower-related organizations. Vocational education programs and skills are also provided without sufficient information on the local job market. In many cases, the result has been the substitution of state or national priorities which may not be suitable at the local level.

One useful step may be the establishment of requirements for data used for vocational education planning. Where serious deficiencies exist (as they do in most areas) this will enable local officials to take specific steps toward collecting needed information and work towards a mandate for structuring future data collection efforts. The following list may not be completely applicable to all localities but is intended to provide general directions.

1) Information should include the relevant planning area for the target vocational education programs (see Chapter II.A.).
2) Information should contain future projections suitable for the establishment of vocational education programs. Experience suggests that a five-year projection in one-year increments is very useful.
3) Labor-market information must include all relevant occupations. This means developing information for occupations which are not closely tied to industrial or commercial projections.
4) The information must be capable of defining high and low demand occupations.
5) As is implied by the above requirements, the information must

provide projections by occupation, not simply by employer or by industry.

6) The information must be provided on a regular basis. A minimum of one-year updates should be provided, with quarterly by far more desirable.

As must be obvious from this list, no one agency will be able to provide sufficient data. Additionally, this list addresses only the demand aspect of employment opportunity; information must also be collected on the supply of persons available for employment in each occupation. The following list should provide some general requirements for adequate supply data:

1. The planning area, or area over which data is collected, should match the area used for job-demand projections.
2. Information should be collected for each occupation identified in the job-demand projections.
3. The information should contain future projections. Ideally, these projections should cover the same time period as the job-demand projections.
4. The information must be available on a regular basis. A minimum of one-year updates should be provided for, with quarterly updates being far more desirable.
5. Occupational categories should be matched between supply and demand projections to facilitate identifying high and low-demand occupations.

An additional suggestion is that the data be arranged so that it can be used by a variety of management information systems. Specific requirements for these systems differ from agency to agency, so that the system devised for handling occupational data should be very flexible.

Agencies for possible coordination:

1) Vocational Education Planning Office - The local education agencies (LEA's) would provide information on (1) number of program entrants, and (2) placement data by related occupations on program graduates. LEA's would receive job-demand data by occupation.

2) State Employment Insurance Agencies (local or regional office) - Although the structure varies somewhat by state, this agency is commonly tasked with providing both unemployment and job-demand data for local or regional areas. This agency should supply manpower projections in a format usable for LEA's. It would also identify potential clients for new vocational and adult education programs.

3) Local Planning Departments - These departments are usually responsible to the mayor or municipal council, and in some cases their authority extends well beyond the city limits. The agency should be able to supply estimates of projected industrial and commercial activity; this would be provided to both the LEA and agencies making local labor-market projections.

4) Regional Planning Agencies - These may be either comprehensive or special purpose agencies. One common activity for either type is a regional economic study which may provide useful

information on trends in industry and employment. This can be used to supplement local information. Additionally, regional comprehensive planning agencies are often designated as the regional Office of Management and Budget "A-95" clearinghouses, through which plans or requests for many types of federal assistance must be channeled. This is a useful point of coordination with many types of activities and information. Typically, LEA's have not been heavily involved with regional planners, so this may require creating new organizational ties.

5) Social Service Agencies - This would include: other agencies with training programs (not necessarily vocational) and other agencies dealing with pools of potential students as well as pre-program and outside needs. Opportunities for direct coordination would involve those agencies which provide direct support (e.g. day care,welfare) to potential clients, to ensure that disadvantaged students have the necessary support to successfully complete vocational programs.

In addressing the possibilities of local data-sharing, CETA guidelines have suggested that CETA prime sponsors and local vocational education agencies cooperate in the formation of local automated management information and evaluation systems. This would include information on both job demand and potential employees and would provide a format compatible with all users. Some federal funding is available for such

[1] CETA and HEW Programs, Dept. of HEW, 1976, p. 61.

efforts. In the past, some such systems have tended to become unwieldy and too complicated for some agencies. However, in recent years data processing techniques have improved to the point where virtually every agency should benefit from participation. What is needed is initiative to create such a system at the local level.

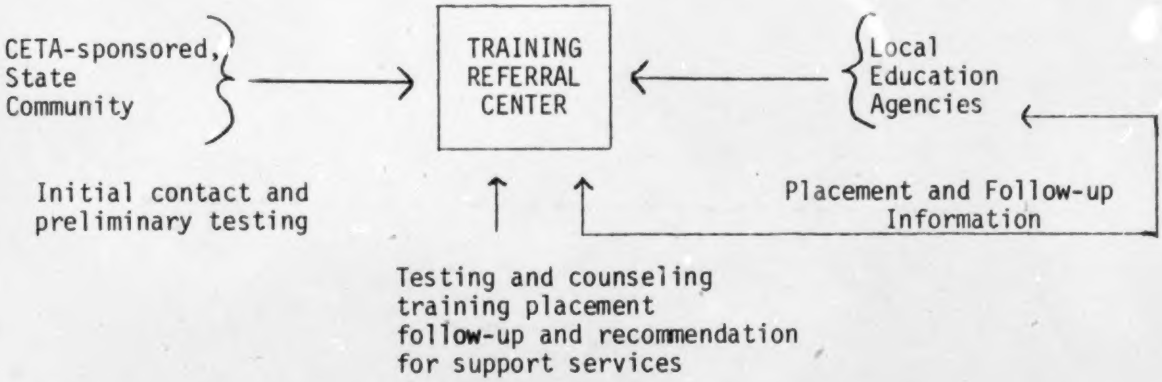
A factor which complicates the measuring of labor force supply within a given area is the multiplicity of agencies offering vocational education and retraining programs. Often these agencies are competing for the same job placements and the net result may be oversupply in certain occupations. Coordination and cooperation are needed to ensure that individual agencies and programs do not all reach for the same market, glutting some occupations and leaving others without adequate programs.

While inclusion of all private training within a single planning system is probably not possible, a reasonable intermediate goal would seem to be the inclusion of all publicly operated programs (and at least some knowledge of the larger private schools). As noted in the preceding section, these agencies should be sharing a common data pool. However, efficient use of available resources requires that these agencies take an active role in coordinating program development.

One method of achieving program coordination is through the appointment of one agency as an area-wide coordinator. This might be either the secondary school vocational administrator, skill center director, or a CETA-designated retraining agency. This office would have the function of reviewing the content and size of all vocational and related programs within the planning area, suggesting new program offerings and the reducing competing programs. The following graph illustrates one alternative structure for coordinating related agencies.

A key feature of this alternative is the establishment of a Training Referral Center. This Center would operate to direct potential trainees to the best source of training for that person, and would provide feedback to both training institutions and "intake" agencies. This would provide the vital link between agencies that counsel outside groups and vocational training centers that have facilities and programs available.[2]

Figure 2


CETA-sponsored,
State
Community
TRAINING
REFERRAL
CENTER
Local
Education
Agencies
Initial contact and
preliminary testing
Placement and Follow-up
Information
Testing and counseling
training placement
follow-up and recommendation
for support services

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[2] Another variation of this concept may be found on p. 26 of Education and CETA, Office of Manpower, U.S. Dept. of HEW, 1976

Coordination between programs and agencies using federal assistance is also accomplished through designated planning agencies. These "A-95" agencies, set up under the 1968 Intergovernmental Coordination Act, review all proposals or requests for federal assistance. As part of the review process, all agencies with similar programs or programs which might be impacted by the proposal must be notified. There are two types of review agencies; statewide and areawide. The statewide clearinghouse is usually the state planning or management office. The areawide clearinghouse is usually a regional comprehensive planning agency, although there are some multi-state metropolitan review agencies. In connection with programs under CETA, all local education agencies with vocational programs should be notified of and included in prime sponsors' comprehensive manpower plans. Every local agency should strive to have maximum input into this plan and obtain maximum coordination with both the CETA prime sponsor and other agencies offering vocational programs.

Information on training program content and qualifications should be more directly traded among local education agencies. This should emphasize maximum opportunities for placement in apprenticeship, on-the-job training and cooperative programs. Increased direct contact between LEA's should also reduce placement competition while other sectors of job demand go unmet. For example, a community college and high school both offering training in the same occupation might redirect their programs toward different qualification levels (where practical) or adjust their program sizes based on their combined placement experiences. Although this type of cooperation already exists in many areas, the channels for it need to be regularized and improved so that it becomes the normal mode of operation in any LEA. Special efforts need to be made to include private and industrial training schools in the program planning process.

CETA and Local Coordination Opportunities

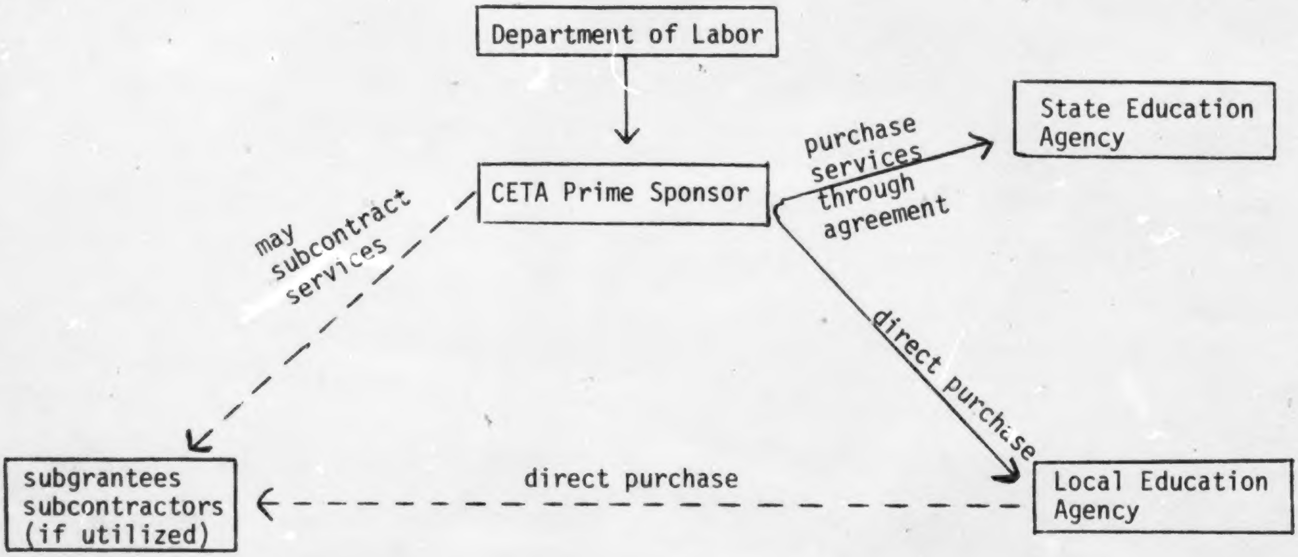
Communities having CETA prime sponsors face a unique opportunity for coordinating the activities of local vocational education agencies in that such coordination is specifically mandated at the prime sponsor level. This means that: (1) the prime sponsor has some responsibility for setting up channels for coordination with agencies which could potentially provide job-related training, and (2) federal funding may be available where proper coordination requires that specific structures be established. This should be used to reduce the administrative burden on LEA's that inevitably accompanies such structural changes.

In providing opportunities to establish new links to the community and reach new groups of potential clients, CETA coordination may be of direct benefit to local vocational programs. One form of benefit is the ability to expand programs without increasing the local burden. CETA provides the prime sponsor with the ability and mandate to contract with existing LEA's for vocational services. Where new programs are needed, it is preferable that these be started within an existing agency, since these programs may also be of interest to segments of the community other than CETA target groups. In this situation, the local vocational agency will be able to provide greater program selection at lower cost.

Coordination through CETA should also provide LEA's with a bridge to other labor market activities, especially employers. While CETA efforts are directed mainly toward certain disadvantaged groups, improved employer contact and placement activities will create a brighter outlook and improved community image for vocational education as a whole.

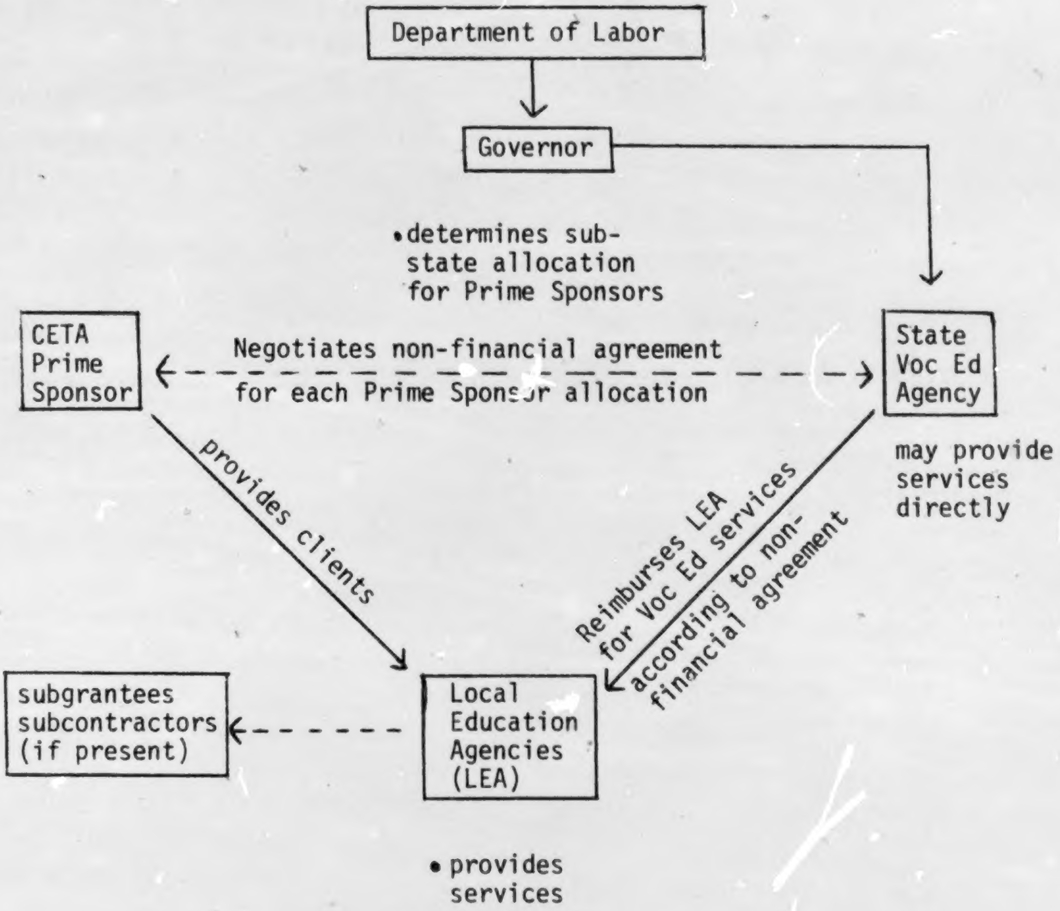
Figure 3 illustrates the place of the LEA in the provision of job-related training under CETA. A major advantage of this arrangement is that if the CETA prime sponsor identifies an occupation where a new training program may be established, the CETA structure can provide both initial funding and clients to begin the program without the local vocational agency having to incur the costs.

Figure 3


Department of Labor
CETA Prime Sponsor
State Education Agency
purchase services through agreement
may subcontract services
direct purchase
subgrantees subcontractors (if utilized)
direct purchase
Local Education Agency

Certain vocational programs may also be funded under the Supplemental Vocational Education Assistance (sec. 112 of Title I) of CETA. This involves a slightly different procedure that is illustrated in Figure 4.

Figure 4


Department of Labor
Governor
•determines sub-state allocation for Prime Sponsors
CETA Prime Sponsor
Negotiates non-financial agreement for each Prime Sponsor allocation
State Voc Ed Agency
may provide services directly
provides clients
Reimburses LEA for Voc Ed services according to non-financial agreement
subgrantees subcontractors (if present)
Local Education Agencies (LEA)
• provides services

This "section 112" funding is a special grant to each state, equal to five percent of the state's Title I allocation. This money must be channeled through the state vocational education agency for vocational education services. The governor's office determines the allocation of those funds to each prime sponsor. One fact of importance to the local vocational planner is that the "section 112" funds may be used for such program-related activities as curriculum development and equipment purchases.

Facilities Planning and Capital Budgeting

While the CETA prime sponsor comprehensive manpower plan should include most short-term coordinating efforts between local vocational education agencies, longer-term planning in cooperation with other organizations in the community may occur outside the CETA process. Where physical planning is involved, this will fall into two categories: facilities coordination and capital budget coordination.

As capital and equipment requirements for many emerging programs become more technical and more expensive, it is likely that an increasing number of programs will be offered "off-site" in cooperation with local industries. Training programs of this type, whether cooperative or apprenticeship, will necessitate coordinating activities with offering industries. These activities include: selection of training site, coordinating pre-vocational activities, coordinating current teaching activities and providing auxiliary support for items like transportation, counseling, and placement services. These ongoing activities need to adapt to different training programs, and some support can be provided through outside agencies.

A key consideration in creating successful off-site programs is the careful selection of firms. To begin the process, those programs with the greatest potential for off-site training need to be identified. When this is done, that list of occupations provides a basis for beginning the site selection process. At this point, the local comprehensive planning agency should be able to conduct a preliminary screening process based on (1) requirements given by the LEA, and (2) its own list of local employers based either on industry data or a local land-use survey. A comprehensive land-use survey should provide information on not only the type of activity, but the size and number of employees as well. This should be especially useful in identifying smaller employers common to many trade occupations. In the past, many of these employers have been reluctant to enter into cooperative or apprenticeship programs where there has been no commitment (by the LEA) to prior financing. Where such financing is possible, the LEA may be able to increase the amount of work experience through its programs.

To facilitate coordination in selecting industries, the LEA should prepare a list of criteria for each program. (See Chapter Five) This might include:

1) the optimal size range of the industry or firm;
2) availability of direct supervision;
3) activities carried on by the firm; (prohibited or desired)
4) availability of state or federal training funds for apprenticeship.

The purpose of the criteria is to exclude some firms that by the nature of their operations are unsuitable for training activities, leaving a working list from which the LEA may select the most suitable.

Some of the best opportunities for off-site training are developed when industries are not yet located in the community. If plant facilities are still in the design or construction stages, modifications required for training may be added with a savings in both time and money. Quite often, industries are willing to enter into training or apprenticeship agreements, only to find that the plant cannot meet health and safety standards without costly modifications. This type of problem may be avoided if the agreement can be made before the plant facilities are completed. Since virtually all plant construction and extensive modifications require prior approval of the planning department, planners should be able to provide the LEA with a list of all ongoing or anticipated projects. That list can be sorted by occupation to determine which industries meeting the preliminary criteria offer promise for cooperative efforts.

In the past, most contact between school capital budgeting and the community was carried on through the community's comprehensive or master plan. This was primarily intended to insure that the construction of schools proceeded at a pace compatible with the provision of road and other public improvements and the growth in population. Little other coordination was expected, although occasionally some savings were achieved by combination with other public construction activities.

Coordination today still can be carried on within the same structure, but it must encompass a greatly increased number of agencies and activities. This includes not only local facilities, but any state or federal training-related agencies that may be expected to provide facilities. Items for coordination include:

a) the type and size of facilities to be constructed;

b) the scheduled completion date;

c) the duration of programs scheduled for those facilities;

d) turnover or disposal provisions after program expiration.

The Physical Development Process

As noted in the preceding sections, physical development plans have a real and lasting impact on the character of the community and ultimately on the community's educational needs and resources. The pace and character of development depend in good part on decisions concerning capital improvements, zoning and development incentives which are part of the community development plans. This section relates the process through which those plans are created and the agencies and structure involved.

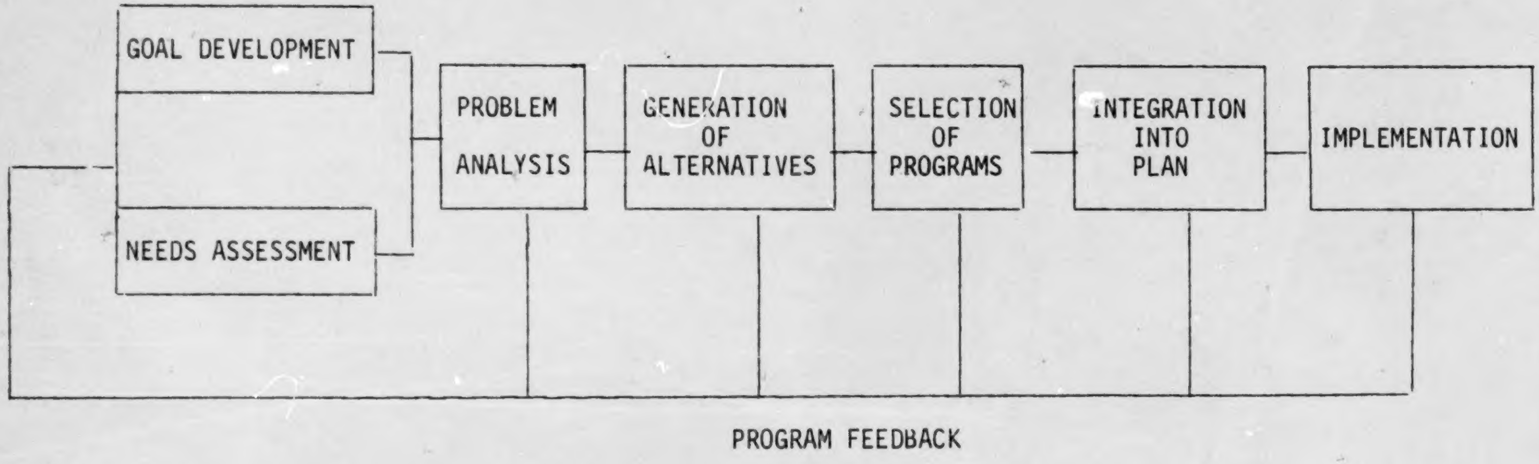
While the need to include school facilities within the community's comprehensive plan has long been established, there is an additional need to closely coordinate vocational program planning with physical development activities. This is because vocational education, much more than other educational activities, is intimately related to employment and commercial activity in the community. Preceding sections as well as this one have emphasized the benefits that vocational planners can obtain by coordination with outside agencies. However, another positive result is that by creating a demand upon these agencies, they will be further stimulated to improve and update planning functions to the benefit of the entire community. In the past, urban planning efforts have suffered because too few outside organizations have utilized the product. The result has been that in many cases innovative plans have been destined to gather dust on another shelf.

The process that community planners traditionally go through is known as the comprehensive planning process. Although the form of this varies considerably, the general form is a research and analysis process that results in a single plan covering the whole community. This is usually broken down into components such as capital improvements, parks and recreation, school facilities and transportation. These components are sometimes linked together by a policy plan which sets forth general goals and implementation devices. This single plan is then adopted by the local government and is usually updated, sometimes at five- to ten-year intervals. Because master or comprehensive plans tend to become overly rigid and out of date, a modified or "program" approach is becoming more widely used. This has many elements in common with other planning processes and is depicted in its basic form in Figure 5.

The development plan is another type of plan that is commonly used in communities which are either rapidly growing or revitalizing deteriorated areas. In the development plan, the local government usually takes a much more active role in making basic decisions. Sometimes this takes the form of a municipal development corporation or development authority. This organization will then act directly to create new industrial and commercial opportunities in the designated areas of the local jurisdiction.

Development plans may be very useful for the vocational administrator in that these plans lay the groundwork for attracting specific industries and occupations to the community. In many cases, development plans spell out the size, form and location of the industry before the physical plants

Figure 5 COMPREHENSIVE PLANNING PROCESS


GOAL DEVELOPMENT
NEEDS ASSESSMENT
PROBLEM ANALYSIS
GENERATION OF ALTERNATIVES
SELECTION OF PROGRAMS
INTEGRATION INTO PLAN
IMPLEMENTATION
PROGRAM FEEDBACK

are constructed. The offer of training for specific occupations may aid the development corporation in attracting new industry. Local education agencies therefore have an interest in being involved with development planning efforts at an early stage.

Trends in Physical Community Planning

One of the most important functions of community planning is to provide a structure for the orderly development of various sectors of the community. Simply put this means that residential construction must be coordinated with industrial and commercial development and municipal facilities, and the whole growth process must be related to the community's natural environment and other limitations. The rates of development may be controlled by the timing of capital improvements, development incentives and zoning and subdivision regulations.

As the types of control indicate, urban planners exercise their primary influence over the use of land. Thus the effect on occupational demand through land-use control is very indirect. For example, certain industries, such as slaughterhouses may be prohibited or severely limited by zoning regulations. This will limit opportunities for meat cutters and related occupations.

Recent court decisions concerning planning practices in Petaluma, California and Ramapo, New York have indicated that public planning controls may be used to limit the timing and extent as well as the details of private development. These policies have given local planners new and unprecedented powers to shape the size and character of the community. And while the voc-ed planner may be more concerned over the difficult and more pressing coordination efforts created under such programs as CETA, it must be remembered that the physical planning decisions will ultimately have a much greater impact on the local requirements and interests in vocational education. This will affect not only program enrollment but the character and location of training stations, the local occupational mix availability of facilities and over the longer run even the size and composition of local population.

Thus far, the new powers of local physical planning controls have been applied most strictly to residential construction. However, planners are increasingly coming to realize that the local economy is the key to regulating the quality of life in a community.[3] As planners become more critical of the impact of proposed economic activity, there will need to be greater awareness of all sectors of the community that affect the local economy. A key sector is the provision of a well-trained labor force and the role of local education and training institutions will assume new importance in the process of local planning.

[3] Finkler, Earl et al. "To Control Growth, Look at Your Local Economy," Planning, July 1976, p. 22

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